

The Week

HOME 1-5
TUC at Blackpool: full report
Oxford economists form new ginger group
Fewer offers would reduce "mad rush" for entry
The NAB plan: criteria and guidelines

OVERSEAS 6-7
Commonwealth students meet in Melbourne
South Africa backs down in race quotas row
World philosophy congress in Helsinki
New Polish unions should help select students

ARTICLES 8-12
Jon Tunney discusses the difficulties facing the Agricultural Research Council in the first article in a two-part series, 8
Edinburgh Festival: Dan Gillan describes the growing involvement of students, and Karen Gold reports on a week of backstage life on the Fringe, 9
Mind to science or science in mind? Richard Gregory discusses how our perception of experiences has changed, 10
Harold Hillman argues that a code of practice should govern the responsibilities of supervisors have to their research students, 11
Town and Gown: Colin Radford argues that the barriers between universities and their local communities must be broken down, 12

BOOKS 13-17
David Papineau reviews the three volumes of Sir Karl Popper's long awaited Postscript to *The Logic of Scientific Discovery*, 13
Martin Davies discusses delinquency and Roger Silverstone language, images and the media (14), Derek Roper reviews *An Infinite Complexity*, a collection of essays on Romanism (15) Richard Bessel discusses how historians have written about Hitler's Germany (16), and R. E. Pahl reviews two books on the use of biography in history (17)

NOTICEBOARD 18
CLASSIFIED INDEX 19
OPINION 26-28

Bernard Crick reflects on the shifting balance between official and fringe festivals in Edinburgh
Jack Straw MP discusses official secrets, and secrecy; and Don's Diary from David Carter of the University of Surrey, 26
Letters on architecture "peer review" and technology research; and "Union View" from Nuffie and the NUS on the NAB plan for polytechnics and colleges, 27

Next Week

Martin Jay on culture and hierarchy
The NAB plan: institution-by-institution analysis
Colin Harbridge on incomes across generations
Right pages of reviews of new science journals

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A tale of two myths

There are two stereotypes certainly, myths probably, about Britain's universities that compete for the attention of lay people, including those most powerful of laypeople, the politicians who decide how much money universities shall have.

The first is a charge and runs roughly like this: "Oxford and Cambridge, which have such a tight grip on the commanding values of all universities, were the product of a pre-industrial world and have stubbornly and successfully resisted incorporation in the modern practical world. The elite and redbrick universities started off all right as down-to-earth institutions with lots of students coming to evening classes on the tram or trolley bus, but they too have been seduced by the impracticality of some higher academic mission."

"The technological universities have either (for here there is a choice of charges) abandoned their roots in industry in the struggle for academic esteem, or been punished by the University Grants Committee in July 1981 for remaining true to their industrial origins. Whichever is true, the conservatism of university values is exposed. Although there are degrees of guilt, all British universities have been infected by ivory-towerism; they disdain relevance and are suspicious of the practical world."

The second stereotype-myth is very different. It goes something like this: "No nation can expect to keep up in the economic race if it does not invest in universities. Universities are the source of scientific discovery on which technology and so wealth depend. They also supply the nation's needs for highly trained manpower. More and more knowledge itself will become a resource as important as labour or machines or energy. So the institutions that produce knowledge, preeminently universities, must be seen as increasingly crucial to national survival and success."

These two popular views of universities, as ivory towers and as science factories, have lasted for predominance ever since 1945. But the view in the ascendancy has always been qualified by the opposite view in the descendant. So although the 1950s and 1960s appeared to be a period when the latter did not lose every shred of influence over popular attitudes to universities. The Robbins report, which secured political endorsement of the most optimistic claims of the universities, was qualified by the binary

policy, which reflected the then descendant view of universities as ivory towers. Today it is the other way round. The ascendancy stereotype is the first; universities are regarded as insufficiently practical. So the grants have been cut and they are being goaded (ineffectually) into more entrepreneurial behaviour by carrot-and-stick rumours of privatization. Yet the second stereotype, although in the descendant, is still there. The science budget has been protected from serious cuts and there are authoritative whispers that the Prime Minister himself is concerned to protect the conditions for scientific excellence.

So the hopeful conclusion may be that just as in the 1960s the "ivory tower" stereotype acted as a brake on the more exuberant expansion of the universities, in the 1980s the "science factory" stereotype may act as a brake on over-enthusiastic contraction. We shall see. Time, of course, is not the only consideration that has affected the relative weight attached to these two stereotypes. On dignified public occasions, as for instance when ministers make speeches, the "science factory" stereotype is emphasized; on less dignified private occasions, as for instance when real political decisions are taken, the "ivory tower" stereotype seems to be more prominent.

Universities constantly complain about the lack of an adequate planning horizon, although their expectations of how distant that horizon should be have been forced by circumstances to be comparatively modest. But the absence of such a horizon reflects not only the chaos that affects all public expenditure in a time of economic difficulty, but also the volatility of the universities' public image(s). It is not simply a case of what can be afforded, as the more sympathetic ministers in the present Government try to insist, but of what it is worth paying for. In the view of the Government and the section of public opinion it represents, Universities cannot look forward to any stability in either income or planning so long as their public work is defined in terms of such crude stereotypes. Governments under the relentless pressure of priorities are bound to respond to the solidity or alternatively sogginess of the universities' public reputation; "science factories" are so clearly more worthy of support than "ivory towers".

The first lesson for universities, therefore, is that they should not be

afraid of image making. We live in a world of images that are manipulated with frightening professionalism and their apparent simplicity, even crudity, should not disguise their power and sophistication. Although it is easy to understand their instinctive reluctance to launch themselves into a public relations world, universities cannot afford to be fastidious. They need their own professionals, their information and public relations officers, more than ever. If universities do not make their own images, in an increasingly professional and self-conscious way, these images will continue to be made for them, always crudely and often hostily.

The second lesson is an extension of the first. The universities should vigorously assault the stereotypes and myths which have imprisoned their public reputations. The "ivory tower" myth in particular needs to be critically examined because it is so widely if rather surreptitiously believed. It is the kind of myth that politicians, elected and unelected, usually with an impeccably anti-practical university education themselves, are fond of reinforcing. Yet there is remarkably little empirical evidence to support it.

Industrial companies, particularly and sadly those from overseas, do not behave as if they believe that British universities have little of practical benefit to offer. The output of scientists and technologists is more than respectable, particularly in quality, compared with the output of rival nations. British science and engineering are of acknowledged international excellence.

But the "science factory" stereotype is in its own less virulent way also a myth. Excellence in university research is not always effortlessly translated into excellence in industrial production. "Knowledge" may be crucial in the society of the future, but not just the advanced knowledge produced in universities. Social and economic progress require the understanding produced by the humanities and social science, just as much as the hard knowledge produced by the natural and applied sciences.

Universities have everything to gain from a more sophisticated appreciation among the public and their politicians of what universities are really like. Such an appreciation might end the "science factory" myth, but it would demolish the "ivory tower" rival. Building that appreciation may be their most important task in the 1980s.

The launch of YTS

Whether in the Youth Training Scheme which began this week we are witnessing a real training revolution as the Government claims, or simply another political expedient masquerading under the title, is difficult to judge at this early stage.

Undoubtedly the Manpower Services Commission should be congratulated for having built up at great speed the regional and local structures necessary to implement the scheme. However, because of the need for speed it has failed to incorporate at the initial stage one of the most important elements of a new scheme: a sound monitoring system, despite its repeated emphasis on quality. By leaving monitoring to the local authorities, the risk that the abuses which were prevalent under the Youth Opportunities Programme will be repeated on a much larger scale under the YTS.

It falls to prevent exploitation of young people - particularly in a scheme which is almost entirely employer-led - or to ensure that the training they receive is a good foundation leading to either employment or further education. It may indeed be as one critic fears "that a massive army of young people suffering from cynicism" will be the clear result of this stage in the process of confusion that exists about

the YTS - not among employers who have been only too keen to jump on the bandwagon, but among young people, trade unions and the education sector as to what its purpose is, and where it fits in into the overall structure. The main criticism for this must be directed at the Government. It pressed the MSC hard to introduce its training revolution, without apparently caring as to where the scheme fitted in the existing structure of 16-19 education and training. Nor was it prepared to provide the massive funds that a successful training revolution really requires. As a result the MSC was forced to push forward hastily with what was intended originally to be the first stage of a three-part revolution, before it had properly worked on its plans.

Not surprisingly, this has left us with a one-year training scheme, with whether it is provided in private companies, or in further education colleges, or in being segregated from the mainstream of sixth form and further education work, once more dangerously dividing a group of young people from the rest of society. Here much of the blame must be borne by the Department of Education and Science, for years the education system has ignored this vital part of young people's lives.

What is clear too is that this stage in the process of confusion that exists about

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Laurie Taylor



HELLO. Oh hello. Is that Professor Lapping?

Yes, Lapping speaking. Who is that?

Crayke, Professor Lapping. Crayke?

Yes, we met earlier this year, February.

February. Did we?

Yes, Professor Lapping. At the interview. The open day for Ashford. You were very important with the essay I'd written on the gauge and thought.

Ah yes. Crayke. A fine piece of work I thought. Very impressive. Interesting ideas on the metaphor of metonymy.

That's right. And at the end of the interview you were kind enough to offer me 2 Bs and a C.

Yes indeed. Well, Crayke. What can I do for you today?

Well you see, Professor Lapping, had a bit of bad luck during an actual examination period.

I'm sorry to hear that. Crayke. Nothing serious, I hope.

Well not too bad, sir. But a mother passed away on the eve of the first examination. And then a father unfortunately decided to commit suicide just two days before.

All of which meant that I was more or less single-handedly to cope with the seven younger children. Do go on, Crayke. What are you trying to tell me?

Well, sir. Let me come straight to the point. What with one thing and another I'm afraid that I was unable to obtain one B and two Cs. Yes.

And... well... I was wondering Professor Lapping, if there was any way you might still consider me an undergraduate place in your department.

I'm sorry, Crayke, but it does not seem as though you seriously misjudged the situation here at Ashford. Don't you realise, Crayke, that this is now a straight two Bs and one C department.

Well I thought that what with one thing and another there were four students this year with straight As. Four with straight As. That's right with 15 points each. Four with fifteen each.

It's just that... And there's only one D in the place and that's a severely handicapped mature student with two As to go with it. So even there we've got a solid 12 points.

I do quite appreciate all that but I was wondering... All of which means that we've got an average A level score for the department of 11.74. 11.74. That's 63 up on last year.

I just thought that what with one thing and another, the department's performance was very impressive indeed. I'm very sorry indeed to hear your news, Crayke. Very sorry indeed. But we're not talking about individuals here. Oh no. We're talking about something much more important. Do you realise that?

Yes, sir. We're talking about educational standards.

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Sir Keith tries to calm fear of more university cuts

by Ngalo Crequer and Paul Flather

Sir Keith Joseph, Secretary of State for Education and Science, this week attempted to quell fears of a new round of cuts in the universities following the publication of new guidance for the University Grants Committee.

Vice chancellors expressed anxiety about Sir Keith's warning in his letter to Sir Edward Parkes, chairman of the UGC, that the committee should consider its response to reduced as well as level funding. It is to discuss the implications of his guidance at its weekend retreat later this month.

But Sir Keith told the *THES* this week that no final decisions had been made, although he was very keen for universities to find more of their money from the private sector. He stressed that no instructions had been given. He was simply asking universities to take stock through their own channels.

He expects to hold more detailed talks within the next few days with Sir Peter Swinnerton-Dyer, who takes over at the UGC next month.

In his speech to the science seminar presided over by the Prime Minister, Sir Keith said he wanted to report that the Government had asked the UGC and the National Advisory Body to consider a more selective approach for the distribution of public money between and within institutions.

"That possibility takes very few words to express," he said. "But it

could be pregnant with a fair amount of useful change."

Next month the universities will be asked to take part in a new rationalization to make them more efficient, more applied and less dependent on the public purse. But unlike the 1981 cuts, from which the universities are just recovering, the Government rather than the University Grants Committee will plot the strategy.

Firmly back on the agenda is the idea of a three-tier system, with the best universities, or the best departments, concentrating on research and the least prestigious emphasizing teaching.

Sir Keith is clearly acting on the policy laid down last July which said that universities would take more responsibility for strategic planning. He made it plain that for the new review period he wants an end to the 1981 UGC commitment to protect unit costs, at the expense of student numbers.

He asked the committee to consider its response to level funding and also to a progressive reduction in funding of five to ten per cent per student by 1990 and a further five per cent by 1995.

But he says these figures do not reflect any present Government intention. He wants the UGC review to cover university planning up to the end of this Parliament.

The UGC has been allowed one year to hold new discussions with the universities and come up with a new master plan by October next year. But again unlike 1981 Sir Keith has ordered that the consultation should be "as

open and wide ranging as possible". The details of how the dialogue will be carried out and the review conducted will be considered at the UGC's residential retreat at Oxford at the end of this month. The great debate will then begin in October.

Mr Stuart Johnson, Leeds director of the University Grants Committee, this week told the Standing Conference of University Information Officers that he expected an announcement within the next 18 months on the relaxation of student targets. "No one is suggesting total abolition but a degree of latitude is being seriously discussed," he said.

He thought that in the universities there would be more full-time students and in the public sector more sandwich and part-time students.

He said that Sir Keith wanted to maintain the level funding for the universities but there were other members of the Government who were canvassing a five to ten per cent cut over the next ten years. Moves towards selectivity and earmarking in higher education was becoming a major issue and would have to be faced seriously.

Mr John Akker, deputy general secretary of the Association of University Teachers, said: "We welcome any consultation that is put forward by the Secretary of State about the future of higher education but we are appalled by some of the assumptions about public expenditure."

Sir Keith's letter, page 5
Leader, back page

Directors bid for autonomy

by Karen Gold

Polytechnic directors have begun negotiating with local authority associations on methods of freeing themselves - through corporate status and petitioning for Royal Charters - from local education authority control.

Following a meeting between representatives of the Committee of Directors of Polytechnics and the Council of Local Education Authorities earlier this year, the CDP chairman and director of Bristol Polytechnic, Dr William Birch, has written a paper pursuing the subject and sent it to chief officers of the Metropolitan and County Council Associations.

Dr Birch's paper, written on behalf of the CDP, argues that at least some polytechnics should be released both from direct financial and academic control.

Royal Charters designed to emphasise polytechnics' special interests in science, technology and vocational education would allow them to validate their own degrees instead of being dependent on the Council for National Academic Awards.

Corporate status, such as the five inner-London polytechnics now possess, would allow them to control their own staffing, keep any profits made, and apply for charitable status to exempt them from taxation.

The CDP has made no secret of its desire to throw off the day-to-day control of local authorities over polytechnics. It supported an earlier Government plan to remove polytechnics from local authority control and has always been unhappy with the compromise embodied in the National Advisory Body.

But for an inventor in a

Doubts over new funding plan

by John O'Leary

Members of the board of the National Advisory Body, meeting this week for the first time since the plan for a redistribution of places in colleges and polytechnics was issued, signalled their intention to modify some of the criteria which they themselves set.

The board will not discuss the plan until its residential meeting next month in Sheffield, but doubts were expressed at Tuesday's meeting about elements of the proposed distribution and about the new funding system recommended to accompany it. Instead of finalising its recommendations in Sheffield, the board may now set aside further meetings to agree changes in the plan.

A computer link is being set up for the residential meeting to allow changes in the plan to be worked out on the spot. But, in spite of an already tight deadline for submission of the plan for transition into budget allocations before the end of the year, some members of the board insisted on additional time to be made available if necessary.

A timetable has also been drawn up to review this year's exercise during 1985. Modifications designed to correct errors and adjust to changed circumstances will be put forward next spring for inclusion in the 1985/86 advanced further education plan.

Briefing, pages 8 and 9

Inventors need unpaid leave, says Sir Rex

by Paul Flather

Universities should consider ways of allowing their inventors to take unpaid leave for perhaps three years to see if they could run their own successful business, Sir Rex Richards, warden of Merton College, Oxford, urged this week.

Sir Rex was speaking to a select audience of 250 drawn from universities, industry, the Government, and the City, at a day seminar on science, technology and industry held at Lancaster House in London, presided over throughout by Mrs Thatcher, the Prime Minister.

The seminar was organized by Dr Robin Nicholson, chief scientific adviser at the Cabinet Office and opened by Mrs Thatcher. She said other countries were making more profit from their British discoveries than Britain did.

"Today we want to see how we can do better," she said.

Sir Rex, former vice-chancellor of Oxford University, and a board member of the highly successful Oxford Instruments Company, was giving a prepared paper on the role of the university in industrial innovation.

He also discussed other ways of promoting inventions: discovered in university laboratories, although he said there was no simple recipe for success. Often they proved discouraging because inventors do not appreciate manufacturing difficulties.

Sir Rex noted Government measures to promote enterprises and the presence of many active venture capitalist companies. "But for an inventor in a

university, it is a big step to resign from a secure appointment and set up his own business. The risks are very great."

He wondered if universities should be encouraged to allow staff members to set up their own companies and to take unpaid leave of, say, three years so that they could resign if successful, but return if not. "This is very inconvenient for a university, but I think it should nevertheless be considered," he said.

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Afternoon tea at Stirling University had an unusual flavour at its open day this week. The university's centre for Japanese studies presented a Japanese tea ceremony.

Two inner London polys face merger threat

The Inner London Education Authority is being urged to amalgamate Central London and City of London polytechnics as the centrepiece of its review of advanced further education.

The education officer's proposal, to be discussed by the authority in October, recommends that although the pace of amalgamation should not be forced, "early restructuring at the top" should take place with the appointment of a joint court and a single director. The Polytechnic of Central London has been without a director since the resignation of Dr Colin Adams.

Although outright amalgamation is recommended by the education officer, two less drastic options are also included in his draft proposals. The first is to encourage amalgamation between the City University and the City of London Polytechnic and to leave the PCL alone. The second is to rationalize courses among the existing institutions leaving City Polytechnic as a single purpose institution of business studies.

Thames Polytechnic's future would be safe under the draft proposals although it is one of the smallest polytechnics and has recently lost a substantial number of teacher training students. The education officer is recommending that Avery Hill College should be merged with Thames to form a more viable institution.

Stronger links with the University of London are also urged. Goldsmiths' College could be associated with the Thames-Avery Hill merger in the new plan, and a small advisory group composed of the ILBA and university representatives is to be formed to oversee future collaboration. Other proposals include the transfer of advanced courses from South-West London College to the merged PCL-City Polytechnic.

The draft also makes detailed recommendations for rationalization on a subject-by-subject basis. One option is to concentrate all humanities degrees at the Polytechnic of North London.

Details, page 2

Presenting the report, *Profit through Partnership*, Dr Tom Johnston, principal of Harlow Valt University, asked that similar themes aimed at the Prime Minister's seminar earlier this week should be set up, which it tentatively called CUBIS, the Confederation for Universities' Business in Scotland.

Each institution would establish its own industrial liaison agency with a "managing director".

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Overseas news



Eiffel Tower sit-in during medical student's campaign

French battle at an end

from Guy Neave

PARIS Significant changes in the structure of medical studies in France were placed on the statute book last week, thus bringing to an end the bitter quarrel between the government and medical students. The uproar, which united medical students and interns, lasted for the first three months of this year. The main source of grievance among interns was the government's proposal to introduce an examination designed to sort out those who would be admitted to specialized training and those destined for general practice. Most of the interns' demands have been met by the decree, published on September 7. Students are to be given a wide choice between general medicine, public health specialties and further medical research. Among the more notable improvements are new provisions for research leave, a sabbatical year, and a year later into a heavily-shielded nuclear studies laboratory on campus. The new machine, called extended-strengthened transuranium (ESTU) will allow the university to obtain higher ion beam energies ranging from nuclei of hydrogen to those of uranium. A vast network of computers and research instrumentation will support the accelerator complex, according to Yale scientists.

US grants poet political asylum

Mr Dennis Brutus, the black poet and activist-scholar exiled from South Africa, has been granted asylum in the United States after a three-year court battle with the American Immigration authorities. In Chicago, a federal judge determined that Mr Brutus, a critic of South Africa's apartheid policy, had ample foundation for his fears of assassination should he return to that part of the world. The Immigration and Naturalization Service had sought to have him deported using classified data that the government withheld from Mr Brutus and his attorneys.

Spelling it out

Students seeking admission to the University of Alberta will soon have to pass a writing test before their application will be approved. "We can no longer tolerate writing incompetence among our graduates," said academic vice president George Baldwin. The university has administered a mandatory writing test since 1980, but there was no admission or graduation requirement attached to it. These students who failed, some 50 per cent, were placed in a remedial programme and then re-tested.

Stanford apology

Stanford University has issued a formal apology to a former Congress member for violations of his academic freedom while he was a guest lecturer in California last spring. Mr Paul McCloskey was brought to Stanford by the Associated Students of Stanford University to teach a course entitled "The Congressional Decision-making Process, 1964-1983". Part of his course concerned peace initiatives in the Middle East.

The students threatened to discharge Mr McCloskey or cut his salary, or if he did not hand them *de facto* control over the reading list and guest speakers' schedule. Stanford's provost, Mr Albert Hartzoff, wrote that he will suspend future accreditation of the organization's courses until its present rules are changed.

Health problems

A study by researchers of the National University of Mexico (UNAM), has revealed that health problems are the leading cause of student dropouts. Catechizing, physical ailments, the report showed that 87 per cent of university students suffer from intestinal parasites, a chronic ailment throughout Mexico. Fifty per cent of the sample population has visual problems and 25 per cent suffer from malnutrition. The health report, prepared under the direction of Dr Francisco Herrera Garcia, director of student medical services at UNAM, said that university students are not only suffering from these ailments but also from mental health problems. The study estimates that in

Student exchanges 'need encouraging'

from Geoff Maslen

MELBOURNE A permanent Commonwealth student organization may be established if sufficient funding can be arranged, delegates to this month's Commonwealth student conference decided. Although the students identified the Commonwealth as "a product of our colonial history" they nevertheless acknowledged it had possibilities in fostering international student links. They will approach the Commonwealth secretariat and the Commonwealth heads of government to discuss the prospect of setting up the organization. The student conference ran for four days at Melbourne University and was the first of its kind for more than a decade. Delegates decided to hold a similar affair in New Delhi within two to four years. Efforts will also be made to produce a regular newsletter to keep student groups in contact with each other.

The conference drew delegates from 22 Commonwealth countries, including student leaders from Africa, Asia, the Pacific, Canada and the United Kingdom. It was sponsored by the Australian Union of Students and the 560,000 costs was covered by governments, institutions and student groups. One of the key issues debated by students at the conference was the matter of student movement between countries for educational purposes. A communiqué released at the end of the conference stated that student exchanges between countries fostered international understanding and were one of the most useful forms of foreign aid. But student mobility was restricted by the fees charged by host countries, the imposition of quotas to limit access and the high cost for many students living in overseas countries.

The conference called on the Commonwealth heads of government to expand aid scholarships; to establish a common fund to increase tertiary education provision at all levels of study; to freeze differential fees in host countries between those charges for home students and those charged for those from overseas; and to develop a policy of increasing women's access to scholarship schemes and tertiary institutions. Referring to the north-south dialogue, the communiqué stated that current aid programmes in many cases increased the inequalities within developing nations between the rich and the poor and between men and women. The communiqué called for aid to developing countries should not simply concentrate on capital works and supplying technology, but should also aim to share information and skills.

On nuclear disarmament, the conference described as a "crime against humanity" the massive expenditure on nuclear weapons while millions of the world's peoples were starving, homeless and jobless. The conference declared its support for a nuclear-free and independent Pacific and called for an end to nuclear testing and dumping, uranium mining, military bases and the presence of nuclear powered and armed vessels in the Pacific. As expected, particularly when the South African delegate to the conference was an exiled former student, the communiqué roundly condemned the apartheid regime in South Africa and Namibia and the repression of the black majority there. The conference called on Commonwealth countries to sever all diplomatic, economic and cultural ties with the South African regime and the imposition of multilateral trade embargoes. At the same time, the conference condemned discrimination against aboriginal people in Australia. This O'Neill, a black Australian, who declared that the problem facing the country was not to do with aborigines, but with whites. What were black Australians to do with the 15 million white immigrants who had invaded their lands, he asked.

Nuclear-free minds at issue

from Janet Hook

WASHINGTON President Reagan has backed down—at least temporarily—from his long-standing promise to abolish the US department of education, but his critics say the agency's effectiveness is still being undermined by staff cutbacks and reorganization schemes. A plan, which takes effect this month, to reorganize several divisions within the department of education and to lay off about 120 of its 5,300 employees from their jobs has provoked an outcry from democratic legislators on Capitol Hill. They regard the reorganization as a back-door effort to subvert liberal education programmes that President Reagan has promised to eliminate, to persuade Congress to eliminate.

The controversy comes at a time when criticism of American schools and colleges has become a hot topic of political debate. President Reagan in recent months has joined the chorus of politicians proclaiming their commitment to educational excellence. During Mr Reagan's 1980 campaign for the presidency, one of the few

US government 'undermining' agency

from Janet Hook

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Italy plugs scientific brain drain

from Philip Willan

ROME

Nearly 1,000 scientists, including Nobel prize-winner Robert Hofstadter from Stanford University, attended a week-long international conference on nuclear physics in Florence. Italy's investment in expensive research facilities for nuclear physics has succeeded in halting the brain drain of previous decades and Italian scientists are beginning to return to work in their own country. Europe's largest tandem particle accelerator was opened recently near Padua and a cyclotron superconductor under construction in Milan will be the first in Europe and only the third in the world.

Among the subjects raised at the ninth world conference of the International Union of Pure and Applied Physics was the improvement of artificial joints for use in the treatment of arthritis. Professor Allan D. Bromley of Yale University said the handling of artificial joints by the implantation of azobenzene in an accelerator reduced their susceptibility to corrosion. This meant they lasted for decades rather than years. Another medical application of nuclear physics is in the analysis of trace elements by bombardment with accelerated alpha particles. As well as being useful for dating archaeological remains, this technique can be adapted to give an early diagnosis of cancer.

During the conference the American scientist George Temmer drew up an appeal against nuclear weapons which was signed by many of the participants. A revival of the utopian spirit of 1968, or a pragmatic response to the rising tide of neo-conservative politics, economic difficulty, and possible demographic decline—these were the contradictory strategies for higher education in the year 2000 which were put forward at an international conference in Frankfurt last week.

The fourth congress of the European Association for Research and Development in Higher Education, which brought 300 policy makers and researchers to the Goethe University, was as a result a schizophrenic occasion. Half the participants, and the more vocal, supported the first strategy. Inspired perhaps by the radical ambience of Frankfurt where the attempt was made in 1948 to create a liberal German nation and failed, they interpreted the theme of the congress in terms of political morality. "Affected also do doubt by the Frankfort campus littered by the dried debris of the past and the radical 1960s, they responded to the intellectual messages delivered by the opening speakers."

Peter Scott reports from Frankfurt on the European Association for Research and Development in Higher Education

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delivered by the opening speakers. Mr Aurelio Peccei of the Club of Rome argued that "a profound cultural revolution" was needed as strong and as widespread as "the techno-scientific revolution" with which we were all so familiar. "Higher education must spearhead it—if not alone, certainly in a leading position," he asserted. According to some strange form of ratiocination, Mr Peccei's speech, made in the luxurious surroundings of Frankfurt's Palmengarten, was itself interrupted by a "battering" demonstration—although most of the listeners were left bewildered about its ideological object. The second opening speaker, Professor Wolfgang Sachs of the Technical University in Berlin, took up the same theme. He said that the university has degenerated into a qualifications-producing factory. His solution was that "popular learning culture comprising networks of concerned people could be fostered."



Reagan: lacked Congress support

education proposals he advanced was the abolition of the education department. But since his election, his plan to replace the department with a smaller, less powerful agency—a "foundation for education assistance"—has won little support in Congress, where legislation would have to be passed to carry out the president's wishes. But now, as education has emerged as a key issue for the 1984 presidential campaign, the Reagan administration

Universities face shake-up in quality control exercise

from Emil Zubryn

CUERNAVACA

The National University of Mexico has launched an ambitious "academic reinforcement" project designed to detect deficiencies in the existing academic programme and develop new initiatives to meet the needs of the nation. Octavio Rivero Serrano, announcing the review, said that the time had come for Mexican universities to take a hard look at their future and to amend former errors, even if structures of institutions had to be modified. He stressed that if academic levels were not perfected, universities would be unable to serve the nation or grow with it.

After a decade of what he termed an "explosive growth" in Mexican universities, the dean said it was urgent that they "own themselves" with growth from a realistic point of view. Speaking realistically, Rivero Serrano said that all segments of the republic should be conscious of the fact that Mexico would not be what it was before its economic crisis. He said that planning for short term recovery measures, and even joint

cooperation, was not sufficient. Mexican universities had the obligation to work out realistic programmes, not on any suggestions from central administration, but on their own, and to take into consideration regional problems. Rivero Serrano emphasized that Mexico would only be able to overcome its crisis if it trained more specialists, particularly in the sciences and technology. The programme launched by the dean would not be a short-term effort, and he foresaw that it would require at least two decades of hard work to achieve success. The main outlook would not be to seek solutions for today's problems, or those of tomorrow, but to direct efforts on a long-term basis and view, he said, in dramatic circles, embracing teaching of students, improved training of teachers and a closer professor-student relationship. The dean said there will also be a need for help and financial aid, for students as well as universities; broader analysis; and determining how best to execute plans and projects which can lift university academic levels to new peaks.

English 'neglected' in Pakistan

from Hasan Akhtar

ISLAMABAD

The neglect of English language teaching in Pakistan is beginning to cause serious concern to academics and officials. Pakistan's University Grants Commission has now taken up the problem and recommended a new approach and programme to improve the standard of English language teaching in colleges. As a first step, an English Proficiency Unit was set up earlier this year at the University of Baluchistan in Quetta with the assistance of the Asia Foundation, which will provide expertise and books for one year. With the help of the British Council and Manchester University it has started a three-month diploma course in English language at the Institute for Higher Education for English teachers in colleges.

A meeting of two minds

by partially deschooling university budgets and gradually linking the university from occupational careers."

The other half of the congress saw the future in a very different light. Their goal was to examine pragmatically the administrative and financial possibilities for higher education in the years up to the end of the century. Some of these pragmatists resented what they saw as the illusions and diversions of the utopians which provided the main thrust of the week's meeting. Mr George Papadopoulos of the Organization for Economic Cooperation and Development in Paris predicted that there would be a growing polarization between two functions of higher education: the traditional one of high level professional training, scholarship and research, and the new emphasis on less formal and specialized education for a much broader section of the population. Many governments might try to cope with this polarization by great differentiation within higher education, by maintaining a protected traditional sector and developing a much more flexible and diverse non-traditional sector, he suggested.

Professor Gareth Williams of the University of Lancaster argued that the claims for the mutual benefits of the close association of teaching and research could not be proved and that they should be funded separately. Mr Lashley, director of the European Institute of Education and Social Policy in Paris insisted that higher education reform was a complex business and that easy excuses—"universities are conservative", "academics resist change", and "more money is the primary condition of successful reform"—were far too simple. But such solid pragmatism did not seem to impress the utopian majority at the congress whose fond memories of the radicalism of the 1960s had clearly been revived by the prospect of the millennium—a prospect that had been encouraged no doubt indirectly by the organizers' choice of theme. The year 2000 may be in the process of becoming as intoxicating a symbol as 1968.

Nuclear research gets ahead

from E. Patrick McQuaid

CAMBRIDGE

Yale University is to receive a \$11m federal subsidy to install one of the world's most powerful and precise electrostatic accelerators for nuclear science research. The central tank of this new accelerator is more than 10ft long and 25 feet wide and resembles a huge submarine. It will be constructed outdoors in a parking lot beginning early in 1985 and then moved a year later into a heavily-shielded nuclear studies laboratory on campus. The new machine, called extended-strengthened transuranium (ESTU) will allow the university to obtain higher ion beam energies ranging from nuclei of hydrogen to those of uranium. A vast network of computers and research instrumentation will support the accelerator complex, according to Yale scientists.

Only the facilities at the nuclear structure facility at Daresbury in England and the Oak Ridge national laboratory in America, will have comparable characteristics in precision, power and versatility to the Yale ESTU, they claim. In July, the high energy physics advisory panel, a committee of leading American physicists suggested to the government's department of energy that it should abandon work on an accelerator at Brookhaven National Laboratory near New York and scrap proposals for another collider at the Fermi national accelerator laboratory outside Chicago.

The panel recommended instead that all efforts be channelled into the design and production of what they envisaged as the world's largest accelerator—a 100-mile circumference machine that would take 10 years and \$2 billion to build. Called a super-superconducting collider, the accelerator would collide particles at 20-trillion volts. The largest American accelerator is at Fermi and it has a circumference of four miles. It accelerates protons to 700 billion electron volts. A 16-mile circumference accelerator is scheduled for construction at CERN laboratories near Geneva soon.

The proposal was put to some 500 physicists attending an international conference at Fermi. Most agreed that conventional technology was mature enough to make such a machine possible. In Washington, the president's science advisor, Mr George Keyworth, has been very encouraging about the plan, according to Fermi scientists. A feasibility study to explore research, development and alternative determination would probably cost between \$150m and \$200m.

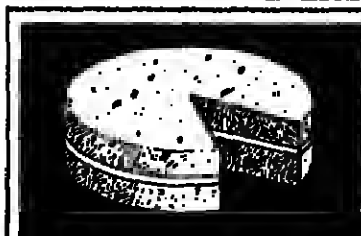


It was sheer bravado, adding the portrait of Lech Walesa...

False hopes abandoned

A gang of forgers has been using the Catholic University of Lublin's printing works to produce fake US \$100 bills, Polish police alleged last week.

About 27 people have been detained in connection with the forgery operation. Throughout the recent Polish economic crisis, dollars have been an alternative currency. Polish citizens are allowed to own hard currency received, say, from relatives abroad and to use it to buy otherwise unobtainable goods in the special hard-currency Fower shops ostensibly set up for foreign tourists. Direct purchase of dollars from foreigners is strictly forbidden but flourishing. The unofficial exchange rate in 1980 was three to five times the official one and later soared to more than ten times the official rate.



NAB 10% funding exercise

How the cake has been cut...

THES reporters analyse how the National Advisory Body's plan will affect individual colleges and polytechnics

BIRMINGHAM

Birmingham is anxious about the implications of being asked to take extra students while its budget faces a cut of up to 6 per cent in just one year.

With 5,332 full-time equivalents in 1982/83, its response to NAB was for 5,592, increased in NAB's proposals to 5,814.

Mr Roy Hammond, the polytechnic's director, said: "NAB have said they want us to take more students on significantly less money." Increases of more than 10 per cent are suggested for business management, accountancy and law, and also in technology and manufacturing.

Brighton is now anticipating a maximum of 4,727 students for 1984/85 and a pool allocation of £12.337 million - just under 3 per cent down on the current year before inflation is taken into account.

Brighton's broad proposals have been accepted by NAB and incorporated an additional 330 places for initial teacher training and 88 as part of the information technology initiative.

The polytechnic has been recommended to take 100 students more than it proposed in its response to the NAB consultation exercise. But the plan would merely reinstate Bristol's view of likely recruitment for 1984/85 given no restrictions.

The NAB secretariat has put forward a student population of 6,485, which is only five fewer than the estimate of likely numbers for next year. This compares with a "bid" of 6,381 students, 11 fewer than the polytechnic had last year. The only programme change highlighted is an increase of some 10 per cent in the humanities, which had been recruiting smaller numbers in the last two years.

COVENTRY (LANCHESTER)

Instead of a modest increase from 5,332 full-time equivalent students in 1982/83 to 5,400 in 1984/85 the poly-



Christopher Balfe chairman of the National Advisory Body



John Bevant secretary of the National Advisory Body

How the NAB plan will affect polytechnic budgets (£m)

	1983/84	1984/85
NELP	16.485	13.875
Middlesex	15.833	14.850
Kingston	12.344	12.231
Birmingham	12.578	12.608
Coventry	13.721	13.108
Wolverhampton	12.203	11.834
Liverpool	15.537	14.910
Manchester	22.889	22.334
Sheffield	18.505	18.438
Huddersfield	10.572	10.227
Leeds	14.005	13.982
Newcastle	15.051	14.928
Sunderland	9.717	9.704
North London	10.917	10.429
South Bank	14.178	12.974
City	8.505	7.852
Central London	11.577	10.185
Thames	8.908	8.352
Bristol	13.290	13.402
Teesside	7.290	7.700
Plymouth	9.152	8.555
Brighton	12.883	12.337
Portsmouth	15.880	13.801
Nottingham	10.408	9.933
Reading	8.498	8.769
Leicester	15.253	15.551
Trent	17.085	17.414
Oxford	9.841	9.135
North Staffs	10.577	10.912

largely thanks to information technology posts.

LEEDS Leeds has been asked to maintain its student numbers at about 6,800 full-time equivalent and not to cut places in such areas as town planning and environmental studies which have been subjected to special scrutiny at national level.

LEICESTER Small reductions in student numbers for pharmacy and social and administrative work courses are more than offset by increases in proposed recruitment to engineering, other technology and science, maths, computing, and business courses at Leicester polytechnic, leading to a net gain of 370 places. Proposed FTE is 6,746 students.

KINGSTON No course closures but a continued shift away from the humanities, social sciences and fine arts towards technological subjects are the main proposals for Kingston.

Its director, Dr Robert Smith is telling staff Kingston has come out of the exercise best of all the polytechnics in the south east.

Student numbers are to rise from the current 4,950 past the polytechnic's own bid for 5,100 to an anticipated 5,285 full-time equivalent in 1984/85.

BRIEFING

This 3 per cent increase in student numbers will take place against a 2 per cent decrease in funding before the effects of inflation, the sums earmarked for information technology, and the £120,000 a year incremental drift on the academic salary bill are taken into account.

LIVERPOOL The NAB recommendations for Liverpool combine the polytechnic with the City of Liverpool College of Higher Education, with which it is about to merge. The total student numbers by around 300 - from the 7,121 of the combined bid, to 7,515. But the increase conceals shifts between programmes which are still uncertain.

According to the polytechnic, because of the recent decisions by the NAB on nautical education may affect them. The latter does however recommend that the threatened BA in environmental planning be reinstated, and the BEng in mechanical engineering expanded. Implications for staffing are still to be decided.

MANCHESTER Manchester is facing severe financial difficulties through the NAB proposal, despite reinstatement of the 10 per cent "drop".

The polytechnic, which has already pruned its budget by £1.3m this year, needs £2m to cope with the proposed FTE increase from 10,000 to 10,429. Staff were lost this year through voluntary redundancy, and about the same number last year. Staff numbers for next year are to be reviewed.

The polytechnic, which has just merged with the City of Manchester College of Higher Education, prioritized all its programmes, most of which will remain unchanged.

MIDDLESEX Middlesex Polytechnic has been recommended to lose around £1.3m from its budget of £15.9m, but that inflation means a reduction of about 11 per cent according to the director, Dr Rny Rickard. Its student numbers would increase from the present 6,392 FTE to 6,585, lower than the polytechnic's bid of 6,392 FTE to 6,585.

... institution by institution

lower than the polytechnic's bid of 6,992. These figures disguise a disproportionate fall in the first-year entrants in 1984/85 says Dr Rickett, since even the higher bid figure included a fall in first-year enrolments.

NELP North East London Polytechnic is scheduled to receive fewer students than it said it could take - but more than it has at present. Its allocation of about 5,000 is an improvement on its present FTE of 4,850 but less than the 5,324 it proposed to NAB.

Many programme areas will receive increased numbers under the proposals but the heaviest loss is the planned closure of its in-service BEd degree, which is to cease intake in 1984.

It will reduce the in-service FTE almost imperceptibly from 140 to 134 - but this masks a continued decline as students complete their degrees. It is something in the order of 90 FTEs after a couple of years. Proposals are likely to try to save the BEd to ensure the continued viability of the department which will otherwise offer postgraduate and post experience courses.

Another area is architecture, where

the polytechnic's current FTE is to fall from 124 to 111. Officials admit this puts the department on the margin of viability.

NEWCASTLE With 100-200 more students but a cash reduction of some £150,000 Newcastle is anticipating serious problems for 1984/85.

Although many factors will remain unclear until at least the end of the year, the polytechnic is working on the basis of a £1m shortfall.

NAB has sought no reductions in any of Newcastle's programme areas.

NORTH STAFFS North Staffs is one of the few polytechnics to be asked to make a modest increase in the numbers of humanities and social and administrative studies students.

NAB was evidently guided by anxieties that reductions in these areas at neighbouring polytechnics would leave the region too weak.

The polytechnic's total full-time equivalent numbers on advanced courses will increase to 4,870 under NAB's proposals for 1984/85 from the

1982/83 total of 4,562 and an expected total for 1983/84 of about 4,800.

OXFORD Oxford sees its 5 per cent funding cut as "almost catastrophic." Some teaching posts are to be axed and it is expected that student numbers will go down 270 to 4,500. Programme changes are inevitable but are still being discussed.

All were given equal priority, with reference to the success of the polytechnic's modular course and of its faculty of architecture, planning and estate management.

PLYMOUTH Plymouth was one of the fortunate institutions for which NAB proposed a reinstatement of the 10 per cent cut.

The polytechnic, which had prioritized parts of some programmes, with emphasis on the technology subjects, says there will be very few programme changes. Reaction to the proposal was largely favourable.

The polytechnic is being asked to increase student numbers in all courses. The FTE student figure is to increase from 4,240 in 1982/83 to 4,600 next year.

PORTSMOUTH

The polytechnic faces a 10.5 per cent cut in budget, which was £15.66m for 1983/84.

At the moment, it is hoping to maintain student numbers but some staff posts may go. Already this year, 32 teaching positions were lost, though the need to call for voluntary early retirement.

Individual course numbers are expected to remain unchanged, except engineering, which will cut its student quota by 60. Fine art will also be reorganized.

The polytechnic has already been cut by more than 7 per cent since 1980/81. Director Dr Harold Law described the NAB proposals as "ridiculous" and said he was hoping the cuts would be modified in later discussions.

PRESTON The polytechnic is exuding an air of satisfaction as the NAB proposals agree with every element of Preston's own internal academic plan.

Student numbers at Preston would rise from 3,900 to 4,500 if the NAB plan was followed, mainly because of an increase in student enrolments. But Preston will be pressing NAB to allow an extra 30 places on its journalism training courses which are proving increasingly popular.

SHEFFIELD The polytechnic is far from happy with the NAB proposals. It is preparing a strongly-worded response, with most of its fire directed at the budget proposals rather than the student number allocation.

Mr John Siddard, the principal, estimates Sheffield is facing a cut next year approaching £300,000 after allowing for inflation at 6 per cent. In fact Sheffield planned for 7,900 FTE students on a 5 per cent cut, and has been allocated 8,084 students.

But this includes the extra information technology students already agreed, and in practice the extra 90 students spread over science and applied science courses will mean just three or four students added to each course.

SUNDERLAND No course closures but increases for courses related to information technology, engineering and computer studies are planned for Sunderland.

There is an increase of less than 2 per cent in student numbers - from the 4,107 included in the polytechnic's



POLYTECHNICS

response to 4,176 in NAB's proposals. In 1982/83 full-time equivalent was 3,736.

TEESSIDE

Continued growth in student numbers at Teesside from about 3,500 in the last academic year to a plateau figure of just over 4,000 is confirmed in NAB's proposals.

The new figures incorporate the intake on to three new courses to be started as part of the information technology initiative.

TRENT

The polytechnic received exactly the news that it anticipated from the NAB. Student numbers are to increase reflecting increased enrolments, and the NAB accepted completely the special emphasis put on part-time work by Trent.

But Professor John O'Neill, the acting director, stressed this did not mean the polytechnic was entirely happy. He said the NAB proposals would work out to Trent's disadvantage with overall less funding bringing down the unit of resource.

Next year Trent would have 7,820 FTE students under the NAB proposals, up from around 7,500. Most of this increase would be in the business management, accountancy, and law courses.

WOLVERHAMPTON

Senior staff at Wolverhampton have been meeting this week to discuss the full resource and staffing implications of the NAB proposals. The polytechnic was working to a 15 per cent cut anyway when it submitted information to the NAB and among the implications were some 70 academic posts at risk.

The NAB plan has in fact allocated 300 extra students to the polytechnic, and course heads are having to consider the implications of taking on extra students very carefully.

The original submission asked for 5,141 FTE students, while the NAB allocation is 5,438 spread over a range of subjects.

Colleges and Institutes

	1983/84	1984/85
Bolton Inst/Tec	2,698	2,698
Bradford/Ilkley	3,898	3,898
Brighton Hall	1,431	1,812
Avery Hill	2,458	2,179
Bath Coll HE	1,994	1,883
Bedford CHE	1,896	1,858
Luton Coll/HE	2,016	2,040
Slough Coll/HE	2,508	2,716
Bulmerhe CHE	2,082	2,084
Bucks Coll/HE	2,181	2,270
Cembs Coll/A&T	2,809	2,914
N. Cheshire Coll	1,045	0,840
Crawley & Alcegar	3,154	3,201
Dorset Inst/HE	4,145	4,028
Dorset Inst/HE	3,888	4,180
New Coll Durham	1,716	1,816
Chelmer IHE	3,733	4,274
So'lon Coll/HE	3,183	3,698
Worcester CHE	2,145	2,123
Herts Coll/HE	1,341	1,134
Nonington C/PE	0,672	0,816
Edgehill CHE	2,723	3,131
Humberdale CHE	5,759	5,878
Nene College	3,006	3,293
W. Sussex IHE	0,883	0,821
Ealing Coll	3,888	3,838
Harlow Coll/HE	1,828	1,912
W. London IHE	2,843	2,880
West Mids CHE	1,819	1,730

WORCESTER

The college has suffered a 10 per cent cut but is not prepared to reveal where this has fallen. According to Dr David Shadwell, the principal, the NAB's response was very much in line with the college's bid which had been planned most carefully, and any alternative might have caused problems. The college currently has 1,000 full-time equivalent students on the BA/BSc combined studies and the BEd initial and in-service courses as well as PGCE courses.

Inner London polytechnics

Once again the Inner London Education Authority is responding on behalf of its five polytechnics and its colleges. Institutions are being encouraged to submit their own responses to the NAB, either as an appendix or as a separate letter.

The general ILEA statement, expected to be up for discussion in committee next week, is likely to pick up from the earlier ILEA submission commenting on the unsatisfactory nature of the whole NAB exercise. It is likely to make four points fairly strongly.

First, it is likely to express dismay at the way the NAB has converted planning statements based on a 10 per cent cut into "bids". As one senior polytechnic administrator put it "if you respond responsibly to a plan, it is pretty galling to be told that this is now your bid".

Second, ILEA will express concern at the likely effects of switching funds away from London and the south-east where there is a concentration of polytechnics.

Third, the authority will focus attention on the London weighting arrangements which do not appear to have figured fully in the NAB deliberations.

Fourth, ILEA will probably comment on the likely effects of abolishing "further funding" which could hit London institutions quite hard, and affect special programmes introduced by colleges and polytechnics.

Dr John Belsham, the director of the Polytechnic of the South Bank, was aggrieved because the polytechnic had tried to cater particularly for the part-time and professional student, and yet the NAB had responded by "savouring us." He estimated South Bank faced the fourth

largest cut among polytechnics, equivalent to about 17 per cent.

South Bank has been allocated about 5,100 students, within a band of its "bid", up from its current intake of 4,950. But it believes it could easily cater for many more, perhaps 6,000 FTEs. Thames Polytechnic has been allocated 3,300 student places under the NAB proposals, 280 fewer than its "bid". No in-service teacher training is to take place at Thames unless it is done in conjunction with Avery Hill College.

City Polytechnic has been allocated 3,400 student places, in line with the 10 per cent cut estimate, but much less than the polytechnic would like to admit. Mr Stephen Jones, the deputy director, said there was great surprise at the way the exercise was being handled. City will also be writing to the NAB to protest specifically at the proposal to close down its navigation department.

The Polytechnic of North London is down 208 FTE student places on its submission to NAB, so that under the new proposals next year it would have 4,600 FTEs, compared to 4,300 at present. Mr David Croome, the deputy director, said PNL had feared less badly than many other polytechnics.

The Polytechnic of Central London, which declined to make any comment, has been allocated 4,000 student places, compared to a bid of 4,060, which surprisingly was itself lower than its current intake of 4,176. The loss of 60 places is accounted for by the proposed abolition of the low planning courses.

cost of the proposed new funding system

HUMBERSIDE

The previous decision of the NAB committee to recommend the closure of the college's advanced technical courses has left Humberside 160 students short of the numbers it had proposed in the consultation exercise. Two degrees, in marine engineering and nautical studies, will close if proposals are unsuccessful.

Otherwise, the college's bid for an increase of some 600 students on the 1982/83 total of 2,800 has been accepted. Part of the increase is attributable to new courses working their way through to three years of enrolment.

LUTON

Luton is expecting a slight increase in funding, about one and a half per cent. Full-time equivalent student numbers at 914 in 1982/83, are set to increase to 1,013 in 1984. However, as there will be no staff increase, the student-staff ratio will worsen. There are 127 lecturer staff.

The college, which did not establish priorities, says there will be no programme changes. But a new course will be offered at the end of next year: a Higher National Diploma in computer studies, which was approved before the onset of the NAB funding exercise.

College director, Dr R. W. Stead said he was "wholly satisfied" with the allocation. Details of next year's budget were still being discussed.

NENE

The college's proposals for student numbers were accepted and increased marginally to allow for the expansion

of part-time work. Full-time student numbers are to rise from 1,850 to 1,903.

Nene had already decided to reduce numbers of its BA combined studies by slightly cutting back options, and planned a small reduction for its BSc higher diploma. It is however planning to increase numbers on DATEC engineering courses.

NEW COLLEGE, DURHAM

The college is angry that it would be cut back further under the NAB plan despite what it thought was an assurance that last year's loss of teacher training courses would be the end of enforced reductions for the moment.

Although the recommendation is for only 11 fewer student places than the 932 in New College's bid, the proposed pool allocation would impose further strains.

NORTH CHESHIRE

Having lost its teacher education courses in last year's cuts, the college has been given almost exactly what it proposed to sustain its recovery. But because its submission was made on the basis of a 10 per cent cut in student numbers, rather than funding, the proposed enrolments will fall short of what the college feels able to cope with.

Overall numbers on advanced courses would fall from 477 to 440 under the plan, but the college will benefit from the mitigation being proposed in the new funding scheme. Engineering, business studies and

management courses are expected to fill some of the gaps left by the loss of teacher training.

ROLLE Student numbers will be exactly as projected. Its in-service and other teacher education courses will have around 100 post-graduate students and another 100 in projected for its BA combined studies programme, to which it gave priority, will have a total of 200 post-graduate students with an intake of 80 a year. Its initial teacher education numbers are set to rise by 46.7 per cent as agreed, and as planned its SSR will be 12:1 which will not adversely affect quality.

SLOUGH

In addition to the 100 extra students the college asked for on information technology, student numbers to 900 should take 40 in computer studies and computer technology, and 15 more on the engineering programme. This increase is likely to be directed to mechanical and production engineering. Student numbers will rise from a total of 1,178 to 1,361 - the bid was for 1,224.

Slough says it has been given the appropriate funding but its assessment is that it will have to cope with more students within the same pool allocation. It does not intend to lose the 20 staff offered as part of the 10 per cent cut but to redeploy these to areas that are expanding.

SOUTHAMPTON

Southampton College of Higher Education has a very high proportion

of part-time students, and therefore gained from the upgraded weighting for them in the NAB's recommendations. Its funding would increase in 1984/85 and student numbers rise from 1,875 FTE to 2,012, fewer than the 2,046 bid. The only reductions proposed are in art and design, and training for valuation and estate agency, although the college will appeal against these.

WEST MIDLANDS Under the NAB's plans, the college would lose all its diversified courses, which have only recently received honours, and remain only with around 500 students on teacher training courses. The college and its authority will oppose the reductions.

The college has been stunned by the NAB's proposals as it had anticipated raising its student numbers to 900 full-time equivalent. Over the last few years the college has been reducing its unit cost, as well as staff. Its strategy was to take more students with fewer resources to achieve a 10 per cent cut.

WEST SUSSEX INSTITUTE

The institute is pleased that the NAB has matched its proposals for student numbers. Its full-time student population is to rise from 1,100 to 1,145 - its bid was 1,171 - to allow for natural growth in sport studies and related arts degrees.

The reduction in its bid will mean no expansion. Instead the institute intends to concentrate as planned on a greater variety of combinations in its BA degree programme.

Win some, lose some? Colleges count the

basically rubber-stamped its proposals. It has agreed to the number of students bid for - around 1,812 (not including overseas students). As a result the college will not only continue its priority work, such as in engineering and business studies, but in areas reluctantly classed as non-sacrosanct such as humanities, psychology and textiles.

BRADFORD

The NAB's figures imply a £237,000 reduction in finance on the same student numbers, or an overall cut of some 4.5 per cent, according to the college's calculations, but this depends on which base figure was used and whether inflation is accounted for.

Bradford's bid for 1,504 students, a cut from 1,585, was accepted by the NAB, although this means a reduction in performing arts. It had already decided to reduce humanities-based courses as part of the strategy to bring Bradford and Ilkley colleges together. It still intends to reduce staffing from 165 to 195 and its postgraduate programme of education numbers from 30 to 50.

BEDFORD

For Bedford the NAB's response means a slight increase in student numbers, from 829 to 842. It is not clear how this will be achieved, but the college is already planning to increase its staff in teacher training and in the continued education programme in the continued education programme.

BOLTON INSTITUTE

The college's bid for 1,812 students was accepted by the NAB, but the college is still anxious about the implications of being asked to take extra students while its budget faces a cut of up to 6 per cent in just one year.

BUCKINGHAMSHIRE

The college is to appeal against the



Pioneers in agricultural research: Rothamsted Experimental Station, Hertfordshire and an electrostatic crop sprayer developed there.

Waiting for the storm to break

In the second of two articles on the Agricultural Research Council, Jon Turney talks to its secretary about the council's uncertain future

Dr Ralph Riley is waiting. Waiting to see if he will really have to go ahead with plans which will mean shedding one in ten of the Agricultural Research Council's thousands of staff. Waiting, indeed, to see if there will still be an Agricultural Research Council.

To be sure, the day-to-day administrative work of the ARC headquarters goes on, but the shadow of outside verdicts soon to come now lies over every medium-term decision about the detail of agricultural research. Dr Riley's immediate task is to keep the machine ticking over through a period of remarkable uncertainty. As secretary to the council, he has had to read more reports on its work in a year than most public bodies would expect in 20. "We're buried under reports," he agrees ruefully.

However, he is used to challenges to the way the ARC operates. It is not the first time he has had to wait. "As soon as I came into this job in 1979 there was a public accounts committee hearing at which the Medical Research Council and the ARC were required to talk about the customer-contractor relationship," he recalled. There followed a long Government inquiry into the committee's recommendation: "that more of the ARC's money should pass to its customer department, the Ministry of Agriculture."

That inquiry was only completed in 1981. "The minister then concluded that it was more important that the money spent on agricultural research was spent well than that there should be a transfer," he said. Dr Riley might then have thought that he could return to straightforward research management, the job he has held in at the Plant Breeding Institute in Cambridge where he progressed from research in crop genetics to director. But the decision on commissioned research in 1981 did not signal an end to the ARC's troubles.

At the end of 1982, after a year of internal conflict over plans to cut staff at two council-run institutes, came the Advisory Board for the Research Council's recommendations for a cut in the budget. Dr Riley is a member of the ARC and recorded his dissent from that decision last year. He argues that the ARC should take account of the wider economic context, which has meant that the ARC's research has to be seen in the context of the national economy. "I am particularly concerned that the ARC's research should be seen in the context of the national economy," he said. "I am particularly concerned that the ARC's research should be seen in the context of the national economy."

He also made the more serious point that the ARC's research should be seen in the context of the national economy. "I am particularly concerned that the ARC's research should be seen in the context of the national economy," he said. "I am particularly concerned that the ARC's research should be seen in the context of the national economy."



Philosophy presented by stages

Daniel Gillan meets a playwright who seems destined to remain on the fringes of success

Stanley Eveling, now at Edinburgh University, has been lecturing in philosophy for 25 years and writing plays for about 20. The relationship between the two activities is complex. He finds it irritating to be asked questions about the gap between the two, because he doesn't feel there is one, only a difference.

Playwriting does not intrude on his philosophy, he finds, but philosophy is necessarily a part of creating characters. "They stand back from themselves, being self-conscious," he says. "A large part of philosophy is being self-conscious about the operation of the mind."

In this sense, philosophy is no burden to playwriting, but in others it can be. Trailing a reputation as a philosopher may arouse expectations of complexity which do not actually exist. After all, he points out: "Philosophy is only highly polished thought, the smart end of the trade as it were."

These reflections stem from the reception given *Buglar Boy* which has been running at the Traverse Theatre as part of the Edinburgh Festival Fringe. It is Eveling's first professional play in eight years and while one critic hailed it as "exceptionally lively", another seemed to have missed the point completely: "*Buglar Boy* is nothing but a sore thumb. It is a study in cerebral and the production is a study in stupidity."

Eveling fears that this lack of popular success means even less likelihood of a play being produced in the future. At one time many of his works were performed on stage, in the early years of the Traverse, on radio and television. These were on the whole "happy places". In 1978 he wrote *The People*, a play he is personally very pleased with. Unfortunately, as yet, no management seems to share his enthusiasm.

The author, while affirming his own qualities, admits: "I may suffer from the singular defect that the characters are extremely intelligent, that their conversation is not an imitation of intelligence, but is actually intelligent. It is not Plato's artist holding up a mirror to nature. The character is a model logician and I know about logic, so what do you say is true?" But he also contains much feeling and it is for this sort of drama.

It is also said that the author "thinks people don't exist yet. They're lying about it to their little wordy colleagues waiting to be resurrected."

In spite of all the talk of self-consciousness, Eveling insists that the process of writing, which excites him, is basically intuitive. "Once the idea begins to shiver and shake, then it works its way out through the fingertips." Suggestions of intellectual elegance simply do not match the evidence.

Admittedly Eveling is writing serious and sometimes difficult plays that require creative effort on the part of the audience, but the result is not hermetic. He wants the audience to contribute to the dramatic experience and is frustrated that commercial and cultural pressures do not seem to give his sort of play a chance.

Luckily he wears a third hat as television critic for *The Scotsman* which allows him to work off some of his frustrations. "I play the clown, the cynic, the satirist, the polemicist and the pundit," he says. "I am not at all surprised that I have been invited to the Edinburgh Festival. I have been invited to the Edinburgh Festival. I have been invited to the Edinburgh Festival."

Culture – a world exclusive

Martin Jay argues that neither high culture nor social hierarchy can be dismissed as simply as some radical critics suppose

"All culture after Auschwitz," wrote Theodor Adorno in *Negative Dialectics*, "is garbage." For the Holocaust finally and irrevocably exposed the lie that supporters of culture and the humanities have promulgated to justify their existence: that the pursuit of what we usually call "high culture" is somehow a humanizing endeavour. But then he added: "Whoever pleads for the maintenance of this radically culpable and shabby culture becomes its accomplice, while the man who says no to culture is directly furthering the barbarism which our culture showed itself to be."

If Adorno seems to be contradicting himself, both attacking culture as garbage and rejecting the implications of that very attack, the explanation is that he was attempting to confront without finching one of the thorniest perplexities of the modern condition: the impossibility of finding a stance on intellectual as well as political issues, that is free of some sort of self-contradiction. He went to remain true to the inherently ambiguous nature of high culture, at once a false consolation for real suffering and an embattled refuge for the utopian hopes for overcoming that very misery. To hold on to an elevated view of culture, Adorno implies, is to be an accomplice of the barbarism it failed to prevent and the hierarchical vision of reality it upheld. But so too is his mindless rejection as nothing but ideology and consolation.

If before Auschwitz, to use Adorno's own shorthand expression, there was a general tendency to accept the self-image of the humanities uncritically, and thus ignore their covert complicity with barbarism, more recently the opposite inclination seems to have gained the upper hand. From many sides, we are now constantly reminded that high culture does not save, indeed that it might do the opposite. Cultural elitism, we are insistently told, is the handmaiden of social elitism and thus has no place in a pluralist democracy. It is no more a radical egalitarian polity. What hitherto had been the rallying cry of disgruntled populists has now become a widespread complaint, as a crescendo of criticism has been directed against "white, male heterosexual" culture by those who fall outside those categories.

It would certainly be callous to deny the legitimacy of many of their complaints and condescending to advise patience. What may perhaps be less out of order is a plea to examine more closely the ambiguities of the anti-hierarchical solutions many of them propound.

For an idea that is normally considered conservative may have covertly radical or at least critical dimensions. To avoid any inference that I am merely defensively retreating from the "infelicitous" of modernity and thus "closed world" of modern hierarchy, let me stress my intention to "refunction" rather than merely defend the value of cultural hierarchy.

As examples of the current mood I have chosen two very different figures, one a distinguished senior historian and the other a younger literary critic, who have recently achieved some prominence. Neither can be construed as direct victims of the current hierarchy, which demonstrates how pervasive the critique has become. The former is William J. Bouwsma, recent president of the American Historical Association, currently Saher professor of history at the University of California, Berkeley, and a world-renowned scholar of the Renaissance and Reformation. He is also the author of a provocative essay in the *Journal of Interdisciplinary History* published in 1981 entitled "Intellectual History in the 1980s: From the History of Ideas to the History of Meaning."

The second is Michael Ryan, who teaches English at the University of Virginia and is the author of a book entitled *Marxism and Deconstruction*, published in 1982. Taking these two scholars together is particularly instructive because they come from very different intellectual traditions, yet arrive at a similar conclusion: in their attitude towards hierarchy, Bouwsma, from the perspective of a Christian anthropologist, and Ryan, who presents himself as a Marxist-Leninist advocate of deconstruction, both denounce the evils of cultural elitism.

Why this new vision should be extrapolated back into history is not, however, completely clear. If the classical view held away as long as Bouws-

ma concedes it did, historians cannot hope to understand the past unless we acknowledge its powerful formative effect on the cultural differentiations of our ancestry. Moreover, the social hierarchy that in some sense was the underpinning of those distinctions must be taken into account in any attempt to reconstruct how meaning was made in history. For as Antonio Gramsci once put it: "All men are intellectuals... but not all men have the opportunity to become so. The point is not to return to an idealist defence of pure intellect above the fray or to construct watertight divisions between high and low culture, but rather to acknowledge that social differentiation has effected in the past (and still continues to effect) the means through which meaning is created and sustained."

Michael Ryan would no doubt have little but scorn for Bouwsma's model of Christian adulthood as a holistically integrated personality. To the St Augustine who cried, "I want to be healed completely, for I am a complete whole," he would probably reply that the only thing from which you really suffer is the old logocentric myth of perfect presence. Relief can only come from a willingness to engage in the infinite, explosive, transgressive play that makes a mockery of any pretension to centred subjectivity, a play that is far more Dionysian than that envisaged in the Christian model. And yet, Ryan is also unwittingly hostile to the elitist privileging of reason or the soul over the other aspects of the human personality. Radical deconstruction and Christian anthropology thus both converge in their distaste for the evils of cultural hierarchy.

In *Marxism and Deconstruction*, Ryan's general intention is to present what he calls a "critical articulation" of these two traditions in order to fashion a libertarian intellectual and political position that will avoid the authoritarianism of earlier leftist efforts. What Ryan finds most radical in deconstruction is its resistance to a politics of exclusion, which he claims has a "necessary relationship" with the hierarchical conceptual thinking Derrida has sought to undermine. Most important among such conceptual hierarchies are the distinctions between transcendence and immanence, consciousness and the body, mental and manual labour, theory and practice, reason and the irrational, efficiency and chaos, science and ideology, works of art and ordinary texts, speech and writing. All of these privilege the first term over the second, which leads to the domination/marginalization or exclusion of the latter.

Following Derrida's arguments, in *The White Mythology*, Ryan contends that the major victims of such hierarchically tainted knowledge have been women and Third World peoples, excluded from the patriarchal system of rationality prompted by European men. So-called feminine mysticism, therefore, is a therapeutic corrective to male rationality, "a sign of moral and philosophical goodness" which, to be sure, ought not to be enshrined in a new hierarchical position of domination. Any intellectual or cultural hierarchy, Ryan argues, is immediately complicitous with political repression. The truly libertarian alternative, Ryan argues, is a politics of permanent revolution which is analogous to the infinite, transgressive play suggested by deconstruction.

Regardless of whether or not this vision should be denounced as an updated version of what Lenin damned as "infantile leftism," it is unlikely to appeal to many today, especially after the discrediting of the Chinese cultural revolution. Nor will it seem very attractive to those with longer memories who recall the disturbing links between a totally relativist cultural nihilism and the decisional politics of will that contributed to fascism.

What, however, seems even more fundamentally questionable in Ryan's argument is the ultimately historical assumption on which it is based. Perhaps because Ryan is so hostile to hierarchy, of any kind, he refuses to privilege any historical cause in explaining the source of present inequalities. Although avoiding the pitfalls of reductionism, this may be just as well, for to do so is to risk the same hierarchies, more basic, and

irremediable than others? It also prevents him from acknowledging that the distinctions of our cultural and social life as harmful illusions does little to dispel them in reality. This, in fact, engages in a kind of magical thinking, which he contends that "mental labour" is always manual, "theoretical knowledge" is immediately practice, and "the political" and "the economic" cannot even be considered as separate categories for the sake of theoretical exposition. Like Bouwsma, Ryan presents a desideratum as if it were already a fact. And in so doing, he blocks out understanding of why in reality it is not.

A wide variety of divergent hypotheses has, of course, been offered to account for social, cultural, political and sexual inequality. Derrida sought an answer in the religious distinction between the sacred and the profane, which itself reflected the opposition between collective moral life and individual material existence. Freud conjectured that when men stood erect and lost their ability to react positively to olfactory stimuli, they began to feel shame about their "base" sexual and excretory functions. Rousseau, with his more primitive understanding of the psyche, blamed it on psychological proclivities towards pride and envy, while Marx pointed his finger at the division of labour and private property. Foucault claims that it is our inevitable fall into language, which gives us the ability to say two things with the identical word and the same thing with different words, that makes hierarchical distinctions possible.

These explanations and others like them are, of course, highly speculative; what they suggest, however, is the extraordinary difficulty of overturning hierarchy, which is an overdetermined phenomenon derived from a vast number of possible sources. It may seem that unless we get down on all fours, give up language, private property and the division of labour, undo all social abstractions like money, stop thinking in terms of parts and wholes, and overcome our biological differences, it is highly probable that hierarchy in one form or another will be around for some time to come.

What may be more useful – and is certainly less depressing – than speculating about the palliative origins of hierarchy is considering the present functions it fulfils. For if the genealogical method bequeathed to us by Nietzsche is right, there may be no necessary connection between origins and current significance or function. To attribute to the general post-structuralist attack on the search for origins to heart, then it is really only the present function that matters.

In probing the function of hierarchy, we are confronted by the problem of bracketing or holding in abeyance our visceral inclinations (toward egalitarianism, which prevent us from acknowledging the ambiguous dialectic of culture suggested by Adorno. In particular, we must avoid conflating all types of hierarchy into variations on the theme of domination, that Ryan exemplifies. For, such a conflation prevents us from considering the possi-



bility that some may not work in tandem with others, but rather against them. It is precisely this possibility that brings us back to the implications of Adorno's contradictory claim that something potentially emancipatory was still preserved in elite culture despite its tainted status.

What Adorno felt could be salvaged was evident in many places throughout his work but nowhere as clearly as in his implicit debate with Walter Benjamin over the implications of surrealism. For Benjamin, surrealism represented a revolutionary attempt to reintegrate radical art and life. In contrast, Adorno championed the variants of aesthetic modernism that remained esoteric rather than exotic in their appeal. Figures like Schoenberg and Beckett, who resisted the demand to make their art immediately effective in political or social terms, were more genuinely revolutionary in the long run than those, like the surrealists, who did not. There were costs, of course, as Adorno's more activist leftist critics never tired of reminding him. An inaccessible artistic elitism might never reunite its emancipatory potential with the social forces that would help realize it.

But in retrospect, Adorno seems to have got the better of the argument. For, rather than leading to anything demonstrably revolutionary, once-disturbing techniques like those of surrealism have shown themselves to be easily adaptable to the demands of consumer advertising. The attempt to break down a hierarchical cultural relationship may unintentionally have contributed to the maintenance of a still hierarchical social one.

The conclusion that Adorno reached was that an art which resists absorption into everyday life in the short run may help prepare the way for a more genuinely liberating unification in the future. The same might be said of other variants of hierarchy that now pervade our cultural life, such as the distinction between intellectual and other forms of history which Bouwsma wants us to reject.

We must not, of course, be merely complacent about the elitist aspects of the humanities as they are now conceived. Nor should we plead for some timeless canon of "great works." The exact content of what we privilege as higher than other aspects of our cultural experience must be constantly rethought and challenged. In specific reserved hierarchy is immutable, nor should any be defended as such. Esoteric art is not forever superior to exoteric, whatever its present functions may be. But the process of establishing new hierarchical evolutions remains, at least for the foreseeable future, inescapable and worthy of our attention. For only by holding on to the contradiction of culture, both false consolation and promise of future happiness, can we hope to move beyond the barbarism that its revocation would only confirm as the fate of even "civilized" mankind.

The author is professor of history at the University of California, Berkeley.

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The editor on trial

Linda Nash illustrates the problems posed by three typical academic 'authors'



caused by dust in the proofing machine.

After the book is printed, Dr Dithers sends a postcard to give the correct form of the important equation on p183. But he will be pleased with his book and in time will come to believe he prepared it for publication himself. Professor Drendon sends an impressive-looking manuscript, produced in sepia on cream paper by word-processor (his retirement gift). The word-processing programme puts his name in eye-catching capitals at the head of every page, which makes anonymous refereeing difficult. The professor has been convinced by the sales representative that word-processor printout can be published just as it is, and it is in any case difficult to consult him about possible amendments to his text because he spends so much time at conferences in Sydney and San Francisco. Style editing, however, presents no problems — the professor learned to write good English at his prep school in 1922, and he has published so much during his long career that his manuscript consists of hundreds of paragraphs that have been through the hands of at least one editor already. The professor is not sensitive to modern preoccupations with racial and sexual discrimination and thinks metrification is a foreign plot, so editors should be on the watch for references to Chinamen, salesgirls, fathoms and furlongs: erchalsms such as the Great War, the Colonies, or Röntgen roys may also slip in.

The professor has other identifying characteristics — he always calls his illustrations "plates", is fond of initial capitals, and dislikes sans-serif typefaces. He writes lots of little notes in the margins, headed "Printer!" He means well — these draw attention to possible editorial or typesetting omissions — but he has not realized that in the modern technology the printer does not actually see the manuscript. Fortunately for editors, every so often they meet Dr Delightful. Dr Delightful has had to type her manuscript on her old portable typewriter these days, but it is neatly done, spaced, including the reference list and the footnotes, which she knows need room for more, not less, editors marking than the main text. She has taken the trouble to visit a typewriter and so she knows why she should use a four-centimetre side margin and why her last-minute additions should be typed on full sheets of paper, inserted consecutively with the rest. She has made a separate list of the up-to-date, specialized typographical conventions of her subject, and she consistently distinguishes between "and", "or", "no" and "O", and uses lower-case letter symbols. Her title is sensibly designed around the dimensions of a realistically-sized page. Her parcel of manuscript arrives on time and includes all the necessary components, neatly and clearly drawn by illustrations, professionally and devotedly typed. She is at her place of work from nine till five, where she can be reached with ease for discussion.

By the time proofs are available, editors are so grateful to Dr Delightful that they consider manipulating the text corrections so they are too few to be chargeable to her royalties, but of course the corrections never approach this stratospheric level. She prepays her manuscript carefully and needs to alter very little at this stage, at least because the typesetter had clear, unobscured copy, there are few typesetting errors. She has conscientiously checked for these, understanding that nobody is infallible, and she has clearly marked them clearly without strident marginal notes.

Dr Dithers, Professor Drendon and Dr Delightful each signed a contract containing a clause about proofing manuscripts "to a form ready for publication", also, they will each pay royalties at the same rate. Although there is little justice in these facts, editors may console themselves with the thought that their efforts may be rewarded by the royalties.

The author is an academic editor at a large publishing house.

Brian Holder reports on the great divide in the teaching of art and design at higher and further levels

A matter of degree

Further and higher education in art and design could be compared to a forest, for there are within it many winding paths and sunny clearings. One feature intrudes. A bleak firebreak, cut years ago, still splits the landscape into two ranging tracts of creative activity. These lands were once called "DipAD" and "Vocational", but are now known as "Degree" and "with halting objectivity, 'Non-degree'". Over this metaphorical gap the two educational sectors view each other with varied attitudes: there is slightly doubtful respect and tolerant cynicism; and several types of plain indifference. In almost all other subjects, such as stinging division, based mainly upon academic achievement at school, is the accepted norm; and where equivalent boundaries might be identified within the employing industries and institutions, it could be argued that students might as well be educated on one or other side of a similar fence. But in our changing industrial scene this argument holds little water.

One of the few things that employers and clients in art and design have in common (and they do not much like the idea of having things in common) is a longstanding scepticism concerning paper qualifications. Whether working in the fine arts or in applied design, or in the bulk of reality that lies somewhere in between, it is proven personal performance that counts. They have in front of them the most tangible and reliable evidence possible — the work itself.

Although there is some loyalty to specific courses and particular colleges, it is a recognition which still owes more to reputation than to factual knowledge of what is taught and how. Thus we have a fluid, pragmatic and communicative group of professions resulting from an educational system which is administratively disparate, philosophically discordant, internally ill-formed and, as a result, politically vulnerable. One wonders how we came to have one of the world's most respected and effective systems for educating artists and designers.

The strange shape of the system today is largely the result of random blows delivered to its various parts over the last 20 years or so. In 1963 the plan among a previously tangled mixture of courses was replaced by the much simpler DipAD. As a result, the existing division of the system was made firmer, forcing courses outside the scheme to rely on a motley bundle of local and regional qualifications, leaving them unevenly resourced and very much out of the limelight.

Some people might have decried that the system had become hierarchical, but the move of the DipAD courses in 1974 to BA degree status reinforced qualitative prejudices. A separation had become a stratification. Having been defined as different in level and in emphasis of work, the sectors have each tended to affirm their identity by concentrating on the areas of divergence between them rather than by collaborating in the activities and aims which they shared. The intellectual complexity of the degree courses was matched by a grimy, yellowed, and somewhat antiquated curriculum. The caricatures were expertly drawn: when the Glass report of 1974 gave the Government the charge of legitimizing the vocational route, it began rounding up the vocational courses into a coherent structure, eventually under the auspices of the then Technical Education Council (TEC). Political security was offered in return for a package of greater accountability, more employable skills and closer industrial liaison.

TEC had its first effects in non-advanced level where it has since done much to improve the standard of course planning and assessment, despite a ponderous administrative system and a disconcerting lack of clear policy statement in the eyes of many colleges. There is no reason to predict a different effect at higher diploma level, although some streamlining has taken place.

Yet the gap remains, and students from either side fall into it in their attempts to cross over. Some are thrown, the victims of bad advice or inadequate assessment. Degree and non-degree courses are usually physically separated, as well. Where they do exist in the same college they tend to work in distant related subjects under the control of different departments, frequently on remote sites.

At foundation and diploma level, courses often work side by side, and as unhappy bedfellows. It is a pity that at this level, where the students are most vulnerable to the prejudices and partiality of their teachers, one can find the most contentious opinions expressed and the most profound disagreements unresolved.

The familiar tales of teaching teams hardly speaking terms are quite plausible. One has only to attend the even-odder corridor encounter, to sense a widespread resentment, to realize how places which have been divided by combination, more than 75 per cent of DATEC are direct conversations of previous foundation courses, now feeding into both BA and HD areas. In many instances, but a policy of mixed staffing under a single department has dissolved collective allegiances while allowing free individual opinions to flourish.

However, recent developments in the sector have led to a more unified approach. The Glass report of 1974 gave the Government the charge of legitimizing the vocational route, it began rounding up the vocational courses into a coherent structure, eventually under the auspices of the then Technical Education Council (TEC). Political security was offered in return for a package of greater accountability, more employable skills and closer industrial liaison.

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BOOKS

Earnings related

by Colin Harbury

Parents and Children: Incomes in two generations
by A. B. Atkinson, A. K. Maynard and C. G. Trinder
Heinemann Educational, £15.00
ISBN 0 435 82097 4

Notions of deprivation and privilege evoke strong emotions, both angry and defensive, especially when associated with the accident of birth. Whether or not we ought to try to move along the road of a more equal society must partly depend on knowledge of facts about the extent to which the accident of birth does actually confer benefits or detriments. As far as economic facts are concerned evidence is scanty.

Although a fair amount of work has been done on social mobility and the interrelations between occupation and education for different generations of families, and there has been some research on the effects of inheritance on the distribution of personal wealth, there have been, until now, no studies at all into the association between the incomes of parents and children in Britain. Hence the importance of this book, which is the single one of ten "studies in deprivation and disadvantage", undertaken under the auspices of the DHESS and the SSRC, to be devoted to economic issues.

The book is in fact a report of an investigation designed to throw light on what may be described as income mobility, which is essential to complement information about the size distribution of incomes. Indeed, one might go so far as to say that a society's view of the acceptability of a given degree of inequality could depend crucially on mobility. If the actual people at the top and bottom of the distribution are continually moving up and down, one might be more content with a greater extent of inequality than otherwise.

There are several approaches to the quantification of mobility. All have advantages and disadvantages. That chosen by Atkinson, Maynard and Trinder is a so-called record-linkage study, working forward from data relating to a past population and tracing members of the next generation of children, to obtain information from them. The method produces results in a relatively short period of time (compared to a longitudinal study), but depends critically on there being a good quality past survey from which to start. The survey selected was that by Rowntree and Lavers in the City of York in 1950.

Seaborn Rowntree, social reformer and chocolate manufacturer, had made two surveys of poverty in York prior to that of 1950. On the basis of it, his last and most experienced work might have been expected to prove otherwise. Apart from certain decidedly questionable research procedures relating to some 2000 old interviews which were claimed to have been carried out, only about two thirds of the original schedules of data collected turned up in the Rowntree papers at the University of York.

These facts are mentioned here, not to discredit Rowntree, whose pioneer work must be recognized, but to emphasize the extent of data problems that Atkinson and his colleagues had to face, and to pay tribute to the care and ingenuity with which they set about their task. Not only did they have a large amount of missing material to cope with, however, a major deficiency of the survey was that it was, by design, limited to "working-class" households, in which Rowntree had a particular interest. Quite apart from the doubt that this is an unrepresentative rather rough-and-ready interpretation given to the meaning of this term, the nature of the sample meant that it was truncated at the upper end, and therefore less suited to the measurement of income mobility

than a random sample from all income ranges which would allow a better analysis of movements around the top of the distribution.

There is also the issue of the representativeness of a sample confined to York. The authors of the 1950 report had expressed the hope that conditions of life in that city might be taken as fairly representative of those in many, if not most, provincial towns. Yet York was, and remains atypical in several important respects. It is industrial structure, for instance, is heavily concentrated in food, drink and tobacco and transport (mainly confectionery and British Rail) and it has had lower unemployment rates and fewer employees in low wage industries than the national average. Despite these points, the research team felt the Rowntree/Lavers survey provided a reasonably valid starting point for their work. In view of the complete absence of quantitative data on income mobility in the UK and the lack of a better alternative, there is little doubt that their decision was the correct one.

Moreover the Rowntree sample possessed one characteristic that made it eminently suitable for the purpose — it had been taken almost exactly a generation before the new inquiry got underway. The importance of this is emphasized by the authors. Since income is typically and heavily age-related, it is essential to try to make income comparisons between persons at similar stages in their life cycles. Otherwise income differences may reflect age differences as much as, or more than, anything else. This was the pre-eminent advantage of the Rowntree survey: almost three quarters of the sample interviewed in 1975-78 were within 10 years of the ages of the parents when they had been interviewed in 1950.

Once the decision had been taken to use the York survey for record-linking, the major task began of tracing offspring and obtaining information from them on income and other characteristics. This turned out to be relatively simply done through local directories and electoral registers in about a third of the total number of cases. The remainder were classed as "difficult to trace" and called for work which was essentially detective work. Since this study was the first of its kind, the authors were wise to confine their searches to a sample of such cases in an endeavour to avoid unnecessary bias and to gross up accordingly. The end product was a "success rate" of about 75 per cent in tracing children (or establishing that none had survived). This gave an overall total of more than 2000 second generation families in the follow-up survey. About half were interviewed and another 165 were sent postal questionnaires. Response rates were very satisfactory, especially in view of the sensitivity of some of the questions on personal income (Rowntree and Lavers had got their income data from employers). Over 80 per cent provided the full information requested. If partial responses are included the response rate was almost 90 per cent — compared to the typical maximum response rate of 70 per cent to the family expenditure survey conducted by the Department of Employment.

To understand the evidence on overall income mobility, it is necessary to appreciate the precise definitions used for two of the three categories: "low income" and "comfortably off". The former is defined as income below 140 per cent of the national existence/elementary benefit scale, which has frequently been taken, by Townsend and others, as the basis for studies of poverty. The latter is defined as income of 200 per cent or better than the same scales. The third category, "intermediate", falls between the two, as expected. Accepting these as one valid basis for comparison, a considerable degree of mobility emerges. Of the 465 Rowntree children whose parents were in the lowest income class a third had moved into the intermediate group and nearly a fifth further up into that of the comfortably off. That is one way of looking at the facts. An alternative which emphasizes the limits to mobility is to note that those from the lowest income group stood a two-and-a-half times higher chance of remaining there than of moving into the top income category.

Particular interest attaches to the upwardly mobile "movers up" and their counterparts, the "movers in". The evidence suggests that the former tended, inter alia, to be those who had also moved out of York, while the downwardly mobile were on average from relatively large families.

Colin Harbury is professor of economics at the City University.

BOOKS

A new Trevelyan?

A Social History of England
by Asa Briggs
Weidenfeld & Nicolson, £11.95
ISBN 0 297 78074 3

The historian's task is not confined to research and the writing of monographs. There is also the need to present this work to a wider audience, beyond the bounds of specialist readers. It is a difficult, exacting, and (for some historians) a distasteful job, making demands which often seem quite contrary to the traditions of scholarship.

Yet if historians are to be anything more than a small group of academics talking among themselves the necessity for "outreach" is clear. Moreover, if the historians themselves do not shoulder this obligation others, perhaps less competent, will do it for them, since the interest in history is present and waiting to be tapped. Among modern historians none has understood this better than Asa Briggs, whose career has been a remarkable demonstration of his belief that the historian should not sit in an ivory tower but get out into the world. His latest book will be eagerly read as a model by one of the leading practitioners of "house vulgarisation".

A Social History of England is an authoritative survey stretching from prehistory to the present in 13 chapters arranged chronologically. It is a synthesis of what are now regarded as the main themes in each period, presented with that perceptive eye for telling detail and written in that lively style which is the hallmark of Briggs's best work. Inevitably the shades of his beloved Victorians hang heavily over the book, and not only in the later chapters, for even prehistory is approached through nineteenth-century perceptions. This has the effect of binding the book together, and is a skillful technique which is used throughout. Thus Shakespeare is brought in to comment on Roman Britain, the fourteenth century is introduced through William Morris, and seventeenth-century slavery is linked with West Indian immigration in the twentieth century.

In an undertaking of this sort any historian has to rely heavily on the work of others, and he is forced into making generalizations in areas where his competence is limited. All too frequently he has to fall back on phrases such as "it has been suggested that..." or "Some historians have thought that...". While this may usefully convey a sense of the differences of interpretation among scholars, it may also leave less informed readers with a feeling of bewilderment. With a coverage as encyclopaedic as Briggs's it is virtually impossible to escape from this dilemma.

The book invites comparison with G. M. Trevelyan's bestselling *English Social History*, first published in 1942. Indeed, the blurb on the dust jacket suggests that it is intended as a replacement for Trevelyan; and in his Introduction Briggs himself is sympathetic to Trevelyan's approach while differing from it in important respects. It is therefore instructive to consider how the new *Social History* differs from the old.

First, Briggs's definition of social history is not Trevelyan's famous "history of a people with the politics left out". Instead of such a negative approach, Briggs proclaims: "Social history is the history of society. It is concerned with structures and with processes of change. Nothing is irrelevant to it. Nor has any evil, however small, been ignored or ignored." One result of this is that Briggs's book becomes virtually a general history, though admittedly with a strong social and economic bias, and with only intermittent (and therefore sometimes confusing) forays into political events. Second, there is simply a great deal more "historical" in Trevelyan. The detailed treatment of the range of the social is much greater, reflecting

the changes in historical scholarship over the last forty years.

At times there is almost too much, and one is left with a feeling that the author tried too hard to "get it all in". Without ruthless selection a catalogue effect is hard to avoid, and there is not enough space to deal with a satisfying length with individual themes. The burden of the sheer amount of recent learning is apparent in the need to make continual qualifications to every generalization; though this certainly brings out the enormous complexity and contradictions of history. Third, the study is extended at either end. Whereas Trevelyan started only with Chaucer's England and ended with the death of Queen Victoria, Briggs is fascinated (one of his favourite words) by Stonehenge and even manages to squeeze in a reference to the Falkland Islands campaign in his final pages.

A Social History of England is a tour de force, the fruit of a vast amount of reading and historical experience. It is of course a personal statement, and for those familiar with Briggs's past work the priorities,

selections, and turns of phrase are not unexpected. There is no over-arching conceptual theory to unify the book; simply a concern with the dynamic interplay of continuity versus change in the experience of individuals and groups. Chapters have such all-embracing titles as "Dependence, Expansion and Culture", or "Problems, Opportunities and Achievements". Some omissions may surprise. For instance, Chartism, although well represented in the passing, and Robert Owen and the Owenites do not appear at all. However, the old stalwarts like Walter Bagshot, Samuel Smiles, Matthew Arnold and the great Victorians generally are brought in to do their duty nobly; and even Mrs Thatcher's remarks earlier this year on Victorian values are quoted (and, alas, misprinted).

The big question of course about a book of this nature is: for whom is it intended? The publishers, encouraged no doubt by the record of the Trevelyan bestseller, have obviously had to print a vast number of copies to be able to sell such a lavish production (beautifully produced, with over two hundred illustrations, including 37 colour plates and a series of historical maps) at such a reasonable price. For serious students the book has limitations. Despite the large number of quotations, there are no footnotes or references of any kind. Neither is there a bibliography, nor any suggestions for further reading. The index is far from comprehensive and cannot be relied on. Perhaps then this is history for the masses? Hardly. Rather it would seem to be history for the book club readers. Who exactly they are nobody seems to know. They may be the same as Everyman or that famous publisher's construct, "the intelligent general reader". They are certainly well served by this handsome volume, which, as the Victorians would have said, provides both amusement and instruction.

J. F. C. Harrison

J. F. C. Harrison is honorary professor of history at the University of Sussex.



London crossing-sweepers in the 1900s, a photograph taken from *The Making of Modern London 1815-1914* by Gavin Weightman and Steve Humphries (Sidgwick & Jackson, £11.95 and £7.95).

Provincial tour

Metropolis and Provinces: Science in British culture 1780-1850
edited by Ian Inkster and Jack Morrell
Hutchinson, £17.50
ISBN 0 09 145180 9

In the 1960s historians rediscovered the glories of British provincial science. Two books in particular, R. E. Schofield's *Lunar Society* and A. E. Musson and R. Robinson's *Science and Technology in the Industrial Revolution*, argued that two centuries back it was in the regions (especially in Birmingham and Manchester) that science was advancing most spectacularly. Spurred by mechanical need accelerated technological transformations crucial to the early days of the Industrial Revolution.

Historians of the 1970s, including many of the contributors to this volume, continued to be impressed in another way, through sociological lenses. What counted for these "new" scholars were not scientific breakthroughs *per se*, but the question: why was science so attractive to provincials? This meant examining which social groups pursued science, what it meant to them, and how they used it. From this socio-cultural perspective, scholars like Arnold Haas and Steven Shapin and Ian Inkster came to depict science as a radical yet also socially legitimizing. Doing science was a kind of visiting

card flourished by "marginal men"—doctors, dissenting ministers, educators—in their bids for upward mobility to provincial manufacturing society.

In turn, London science was also interpreted from a sociological perspective, which gave prominence to the cult of the amateur. The ideology of "amateurism"—the disinterested pursuit of truth for its own sake—enabled aristocratic savants and patrons to head metropolitan organizations such as the Royal Institution long after science was professionalized in Germany and France.

The present volume makes a distinguished contribution to this tradition. It comprises nine new essays, all by researchers and critics who, like the first, by Inkster, surveys the state of the art, spelling out in a helpful and self-critical way the presuppositions of his own researches. Three then examine metropolitan science: Roy MacLeod's study of the 1830s and 1840s, J. N. Hays's "yellow pages" and to scientific lecturing in the first half of the nineteenth century, and Paul Weightman's spirited re-examination of the British Medical Society, which, though short-lived, was energetic and productive.

Five essays then turn the province. Shapin looks at the diffusion of scientific knowledge among the 1840s, an entertaining tale of misadventure between greater and lesser men. Michael Neve probes the life and work of the Newcastle Literary and Philosophical Society and Jack Morrell does the same for the Geological and Polytechnic Society of the West Riding of Yorkshire, showing how utilitarian science gave way to romanticism.

ly, Michael Durey examines the cholera epidemic of 1832 to bring out the low and dependent status of provincial medical practitioners.

These stimulating essays bear out the fruitfulness of "cultural" approaches to the sociology of science, though many of the sociological models, which initially seemed so promising, get a real empirical pasting. No one has a good word for the concept of "professionalization" and several authors are troubled by the nebulousness of the idea of "marginal men" (marginal to what?), in a previous essay, for example, Inkster has argued that a particular group of London savants—the "Athenians"—were "marginal", because they were young and Quakers. But Waindell tells his editor that this will not do: the same men—snapped from another angle—actually appear rich, well-connected and esteemed for their philanthropic activities. For his part, Neve boldly dismisses the habitual association of provincial science with "outsiders": in Bristol at least, early Victorian science was quintessentially the tool of alert, establishment Peelite Tories.

Perhaps, then, these essays show a research programme at its peak, about to fragment and decay. Indeed, most of the pieces were written several years ago, and some have already been overtaken by new research, partly through Morrell's own Association in *Gentlemen of Science: the Advancement of Science* (Clarendon Press, 1982). My guess is that we are seeing the last of the "marginal men".

Roy Porter

Roy Porter is a lecturer at the Wellcome Institute for the History of Medicine.

Socialist strategies

Labour and Socialism: a history of the British labour movement 1867-1974
by James Hinton
Harvester Press, £15.95 and £5.95
ISBN 0 7108 0154 8 and 0184 X

Let it be clear that it is not to be a politician's party but an agitator's party... The people's real hope and strength lie for the present in the industrial field. When they are strong enough to consider Parliament as the time for direct legislation and administrative action.

So spoke a former Independent Labour Party stalwart as the British Socialist Party was launched in 1911. His words are quoted with a degree of approval by Dr Hinton—and the quotation gives some of the flavour of his stimulating account of the British labour movement.

Whereas G. D. H. Cole and Raymond Postgate in their famous book *The Common People* (1938) gave the impression that the political left was synonymous with the common people, James Hinton is careful to define his subject as "movement working on behalf of the poor, rather than movement of the poor". His book is about how the British labour movement has tried to achieve social justice. This provides not only a clear cut theme but also a test for judging the groups and notables in the movement. Thus Hyndman and the Social Democratic Federation are condemned as being too dogmatic, while the anarchists are dismissed as "those who preferred the bomb to the working class as the agency of human liberation".

A critical issue for James Hinton is the realism, or lack of it, in the various strategies proposed for attaining socialist society. In discussing the period before the First World War he observes that "the central concern of British socialism remained the abolition of poverty rather than the abolition of capitalism itself". He is not impressed by the strategies of the syndicalists or the advocates of Direct Action in 1919-1920: they suffered from "illusions of the revolutionary potential in trade unionism". He condemns the Labour Party, especially after 1926, for its narrowly electoral politics. "Whole areas of potential mobilization—the street, the housing estate, the workplace—were systematically fenced off by the nervous and contradictory leadership of an increasingly bureaucratized movement".

For much of the period the body which comes closest to satisfying him on socialist strategy is the Communist Party. In his last chapter Dr Hinton briefly discusses the period since 1951 and "the crisis in the old labour movement". He looks to a re-evaluation of socialist politics coming from British socialism coming to terms with feminism, environmental, anti-nuclear and other such groups. This may well be part of the answer. The experience of recent times including the 1983 general election, however, suggests that support for Labour on their issue but not more generally.

Dr Hinton's theme gives little room for the religious or ethical yearning for British socialism: the former receives only one paragraph and Bruce Ogilvie's notion of fellowship is seen as "a mawkish sentiment". Yet, whether Christian or humanitarian, there are many in British society who are repelled by Thatcherism on ethical grounds. The book has the merits of a good history, but it is a pity that it does not clearly argue point of view about the weaknesses inherent in the British labour movement and thereby exposing its failures. Like the work of G. D. H. Cole it is committed history. What it covers is a shorter period. It is nevertheless seen as the successor to *The Communist Party* that we have long needed. It should find a wide readership in higher education circles. Above all it is a book which activists in the British labour movement will want to read and will read with profit.

Chris Wrigley

Dr Wrigley is senior lecturer in economic history at Loughborough University.

SCIENCE JOURNALS

Coasting along

Continental Shelf Research
edited by Michael Collins and R. W. Sternberg
Quarterly
\$35.00 per annum (individuals),
\$85.00 per annum (institutions)
published by Pergamon Press
Coral Reefs
Quarterly
DM128.00 per annum
published by Springer

The life cycle of the common scientific journal is now well understood. To be viable it needs contributors, editors, publishers and regular subscribers, each group concerned with its own interests but dependent on the activities of the others. Conception is thought to proceed from an alliance between potential editors and potential publishers, but the details have not been reported. However, the process of gestation is both public and prolonged. Other working editors are recruited; an advisory team of distinguished additional editors is assembled and consulted about the form and content; invitations are sent soliciting papers from potential contributors; libraries are invited to subscribe.

At this early stage a wide appeal attracts most interest. Editors and contributors, drawn equally from Europe and North America, should represent all possible aspects of the subject area. Both of these new journals conform to the pattern of the species. In addition they both have the genuinely commendable aim of promoting a coordinated approach to that most interdisciplinary of sciences, oceanography.

Continental Shelf Research complements Pergamon's well-established *Deep-Sea Research* and their review journal, *Progress in Oceanography*. It is intended to fulfil the need for a journal dedicated to research contributions from scientists and engineers studying the continental shelf environment. The physiography is well defined, but the scientific scope is quite general. Articles dealing with the results of fundamental and original research in physical oceanography, chemistry, ecology and sedimentology, for example, are considered for publication. The editors intend to place emphasis on interdisciplinary process-oriented contributions, and on the publication of results from innovative experimental studies with general applicability. This need to focus continental shelf studies has also been recognized by the recent renaming of the Academic Press *Ethnology and Coastal Marine Science*, as *Estuarine, Coastal and Shelf Science*. Although these two new journals have the same common aim, their scope is distinct from those dealing with estuarine and coastal research.

David Pugh

David Pugh is with the Institute of Oceanographic Sciences at Bldston, Merseyside.

A matter of survival

Journal of Proteolysis
edited by M. Zouhair Atassi
Bimonthly
\$108.00 per annum
published by Plenum Press
Biochemistry Reports: short reviews and reviews in molecular and cellular biology
edited by C. A. Pasternak
Monthly
\$95.00 per annum
published by the Biochemical Society, 7 Warwick Court, High Holborn, London WC1

When I first became responsible for my departmental library three or four years ago, hardly a month went by without my receiving an announcement of "eight new journals" or something similar from many large publishing houses. Perhaps they still come, but I have ceased to notice, and in any case the numbers of new journals certainly exceed any demand or need for them in the disciplines they purport to serve.

Of all the primary research journals in the general area of biochemistry that have appeared in the past decade, I know of only two. *Nucleic Acids Research* and *Cell*, that can be called successful. *Nucleic Acids Research* filled an obvious gap in the literature

of nucleic acid research, and *Cell* filled a gap in the literature of cell biology.



Flair, a computer graphics system devised by the British Broadcasting Corporation for use by graphic artists, can be used to "draw" cartoons. This illustration is taken from *Image and Vision Computing*, the first issue of which was published by Butterworths earlier this year at £75.00 per annum (single issues £22.50). Published quarterly, the journal intends to cover all aspects of the relationship between computers and vision.

produced by the very rapid growth in the subject, whereas *Cell* did not so much find a new gap as take over an existing one that the prematurely elderly *Journal of Molecular Biology* was failing to exploit. These seem to me to illustrate the ways in which new scientific journals can be launched with any hope of success, yet the flood continues.

Journal of Proteolysis is clearly aiming for the prestige end of the market. Its large editorial board headed by M. Z. Atassi consists mainly of people I have heard of (49 of them to edit the 19 papers published in 1982). Papers are in general of high quality, although I would guess that a significant proportion of them published so far have been invited rather than genuine submissions. None the less, I cannot see a real need for a new journal in this area, as most of the papers published could find a home in any of the leading biochemistry journals, where they would be more likely to be read. The founders may be hoping to emulate *Cell*, having noticed that the section of *Biochimica et Biophysica Acta* devoted to proteins and enzymes is the weakest section of that journal, but there are at least four other journals publishing excellent papers on these topics. First published in 1982, with 340 pages, the size of *Journal of Proteolysis* will almost double in 1983, as will the price (from \$57 to \$108 for libraries).

Biochemistry Reports, now in its third volume, is a rapid-publication journal that aims to publish a wide variety of interesting and significant papers within about two months of receipt. If one can believe the stated dates, it certainly achieves the aim of rapid publication, with most papers appearing in the month of receipt or the month afterwards (although a date of receipt of the 25th April 1983 for a paper in the issue of April 1983 may give rise to a little scepticism). Papers seem to be of high standard, with a significant proportion by well-known authors.

As I believe that fewer than one per cent of the papers that appear in rapid-publication journals are in any more urgent need of publication than most other papers, I shall not comment on the urgency of the material in *Biochemistry Reports*. More important, as this new journal will have to compete not only with the well-established and thriving *FEBS Letters* and *Biochemical and Biophysical Research Communications*, but also with another newcomer, *Biochemistry International*, its chances of success at a time when libraries are anxious to reduce their subscriptions can hardly be rated very high. None the less, I was more impressed with the three issues sent to me for review than I expected to be, and I hope the journal will do well.

Athel Cornish-Bowden

Athel Cornish-Bowden is lecturer in biochemistry at the University of Birmingham.

Publishers were requested to send for review the three most recent issues of any science journal that had appeared for the first time since January 1980. The following collection of reviews is based on a selection of those received. A list of journals of which no reviews were commissioned, appears on page viii.

Novel peptides

Regulatory Peptides
edited by S. R. Bloom and F. E. Bloom
Monthly
DM160 per annum
published by Elsevier Biomedical
Neuropeptides
edited by M. J. Brownstein and J. Hughes
Bimonthly
£44.00 per annum
published by Longman

In recent years, a variety of novel peptides have been found in the brain, many of which were first discovered in endocrine glands or in cells within the gastrointestinal tract. Inevitably, this has led to a phenomenal output of papers describing their distribution in various tissues as well as their effects on various parts of the body. What has emerged is that these peptides regulate cell and tissue function in disparate parts of the body—hence the term "regulatory peptides".

Neurotransmitters are the chemical messengers that convey information from one nerve cell to the other within the nervous system. Most of these

peptides probably act in this fashion or interact with other neurotransmitters. The neuronal pathways containing peptides are diversely branched and may affect the brain in a rather diffuse fashion.

In view of their existence within neurones, and at the last count there were 31 such peptides, they are sometimes called "neuropeptides". These neuropeptides often co-exist together with monoamine neurotransmitters within the same cell and are released from its nerve terminals. These peptides and the monoamines provide, therefore, a rich diversity of chemical messages within the nervous system. It is now clear that these peptides have behavioural as well as somatic effects in the body and may be involved in both mental and neurological diseases.

The seemingly endless stream of papers defining the function of these peptides has resulted in the appearance of new journals. Long-established journals such as *Brain Research* and *Neuroendocrinology* will carry many papers dealing with their effects but such journals must also cope with other unrelated work. As a consequence, more specialized journals have appeared including *Regulatory Peptides* and *Neuropeptides*. Both these journals provide prompt publication of interdisciplinary studies on the physiological and pathological role of these peptides.

The scope of *Regulatory Peptides*, an attractive journal that is edited by two luminaries in the field, is indeed wide, and only copy will contain contributions from the most reputable laboratories.

Neuropeptides, which is edited by two highly distinguished scientists, is a current-rapid publication journal and carries as a valuable appendix the monthly bibliography on neuropeptides prepared by the University of Sheffield Biomedical Information Service, which should enable scientists to trace current papers of interest at a glance. The fact that papers appear within six weeks of acceptance makes it a most attractive journal in the race to be "first". When this newest journal reaches a wide audience, the quality of its contributions should improve; at present, they are not all of the same high standard. Nevertheless, it is obviously a journal with great potential.

Mortyn Jones

Mortyn Jones is reader in reproductive physiology in the department of gynaecology at St Thomas's Hospital Medical School, London.

Biology at the poles

Polar Biology
edited by G. Hempel
Quarterly
DM168.00 per annum
published by Springer

Generations of polar biologists have had to distribute their findings across a wide range of publications from monolithic expedition reports in the general biological literature, and to one or two non-specialist, interdisciplinary polar journals. Although this has forced them to maintain their awareness of events in the non-polar biological world, the vast, undigested literature is a formidable hazard to newcomers. These in turn may be all too easily tempted to specialize early—to find their cosy corner and stay in it. All of which may help to explain why there are so many specialists in polar biology and so few with a broad outlook—above all why the bi-polar biologist is almost unknown.

First published in July 1982, *Polar Biology* has produced six issues by July 1983. It will presumably settle to a less frenetic pattern of annual volumes and quarterly numbers. Dr Hempel, the managing editor, heads an impressive international team of editors and advisers.

my editors, whose stated intention is to present "results of all kinds of studies in plants, animals and micro-organisms of the polar and subpolar regions". Will it help?

Although this statement of editorial policy suggests that it could, there is room for doubt. A most useful service that a new journal could perform would be to attract reviews and syntheses that might help polar biologists in related fields to understand each others' work and guide newcomers through the literature forest. Although one good review in each issue would be welcome and two would be a blessing, what we buy in the first six issues are some 46 papers, with few exceptions reporting new work in relatively narrow fields—40 of them are exclusively Antarctic and only one bi-polar in approach. About one-third concern the non-polar biological world, the vast, undigested literature is a formidable hazard to newcomers. These in turn may be all too easily tempted to specialize early—to find their cosy corner and stay in it. All of which may help to explain why there are so many specialists in polar biology and so few with a broad outlook—above all why the bi-polar biologist is almost unknown.

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Bernard Stonehouse

Bernard Stonehouse edits "Polar Record" at the Scott Polar Research Institute, University of Cambridge.

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SOFTWARE centers on the software writer with the emphasis on conveying the results of practical experience for the benefit of the computing community. Both "systems" software and "applications" software, for use in batch, multi-access, interactive and real-time environments are included.

Vol. 14 (1984) Monthly
UK: £115.00
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Numerical Methods in Engineering

Editors
Professor O.C. Zienkiewicz, UK
Professor R.H. Gallagher, USA

This journal provides a common platform for the presentation of papers and exchange of views on numerical methods, used to solve a variety of engineering problems in such areas as heat transfer, structural analysis, fluid mechanics, and electronics.

Vol. 20 (1984) Monthly
UK: £180.00
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These are just three of the many journals published by Wiley. A detailed prospectus containing information on the full list can be obtained by writing to the Journals Department at the address below.

John Wiley & Sons Limited
Baffins Lane, Chichester, Sussex PO19 1UD, England



Optimal control

Optimal Control: applications and methods
edited by B. L. Peterson and M. J. Grimble
Quarterly
£70.00 per annum
published by Wiley

Control engineering lies, together with electronic and electrical engineering and computer science, at the heart of the new technological revolution concerned with industrial automation, signal processing, information technology, and robotics. The concept of "control" can be briefly described as the problem of obtaining desired behavioural characteristics from a system by on-line collection of data and the systematic (computer-aided) processing of the data as an aid in decision making.

These basic problems occur in almost all branches of engineering, economic decision-making, biotechnology, and some branches of medicine. The field is therefore inevitably interdisciplinary, with an importance that is rapidly increasing as process plants increase in complexity and demands grow to increase efficiency, reliability and safety and to minimize

usage of natural resources.

Optimal control is a distinct and self-sufficient branch of control engineering that is concerned with, in rough terms, obtaining the "best" performance from a system. For example, it may be necessary to operate the plant to minimize energy consumption and hence cost. In general, the notion of "best" is formulated mathematically by requiring the decision-making procedure to minimize or maximize a performance index devised to represent quality of control. The main problems of research interest are the analysis and characterization of optimal controls and the construction of efficient computational procedures, but the ultimate objective of the programme is the implementation of the resulting computer control scheme on industrial plants.

The majority of journals with interests in optimal control cater for theoretical studies. In contrast, this new journal has an active editorial policy of attracting papers devoted to applications. Its main aim seems to be to act as an international forum for applications studies to enable theoretical researchers to identify the wide applicability of the ideas and unresolved problem areas and to give researchers with an interest in one specific applications area some insight into problems arising in others. The international interest is illustrated by 23 papers published in the last three issues with authors from over 11 countries worldwide. These papers also indicate the success of the journal in attracting papers from many applications areas including population control, orbit transfer, resource allocation, guidance, robotics, waste treatment, control of chemical plant, ship manoeuvring, and political lobbying. The journal has, in fact, a sound

interdisciplinary base, the papers originating from university departments of control, mechanical, and electronic engineering, field and systems, mathematics, materials science, and humanities and social sciences, together with contributions from a number of industrial and government research laboratories, including the National Aeronautics and Space Administration.

The journal contains a number of good quality papers and there is no doubt that it fills a gap in academic publishing. However, optimal control, with the exception of the related notions of optimal filtering, is only one aspect of control methodology. It is a popular in British industry due to its realization. It is, on the other hand, more popular elsewhere, particularly in the United States.

The journal's limited readership might have jeopardized its success but the editors have wisely decided to only four issues per year and are taking a wide interpretation of their own policy. Illustrated by a recent special issue devoted to self-tuning control, although this field of study is not strictly speaking, a branch of optimal control, it is of great interest to applications workers and combines the latest of prediction and modelling to optimal control schemes with certain optimality properties.

I have little doubt that, with its wide interpretation, the journal has a wide role to play for both authors and readership.

D. H. Owens

D. H. Owens is reader in control engineering at the University of Sheffield.

Optics and lasers

Optics and Lasers in Engineering: an International Journal
edited by J. N. Butters
Three yearly
£41.00 per annum
published by Applied Science Publishers

Although they were once often described as an invention in search of applications, lasers have revolutionized optics. And there are now many applications over a broad field covering biology, medicine, physics, chemistry, surveying, engineering and electronics. Despite its title, this new journal includes coverage of all the industrial applications of optics.

The popular conception of a laser is an emitter of a very powerful beam of light, which may be true in some circumstances. In fact, laser beams do not have to be powerful. The fundamental characteristic of a laser beam is its coherence: the fact that its oscillations are in step both across its breadth and also in time. Even if the laser is not powerful its coherence allows the beam to be focused so that it is very intense, unlike light from, say, a lamp bulb which can only be focused to a limited degree. Many applications rely on this possibility of focus: the videodisc player and analogous optical data storage systems for computers; laser machining, cutting, welding and surface treatment; printing; and surgery.

The regularity in time of the laser beam means that it has a well-defined frequency and therefore wavelength. This allows the laser to be used to measure distances to high accuracy, usually using an interferometric method. In which one laser beam is arranged to combine and be compared with another. Applications are in surveying or measuring position or deformation to high accuracy. One important type of interferometry is holography, in which one laser beam, the reference beam, is used to measure and record the properties of another. Holography may be used to produce three-dimensional pictures, to produce optical elements such as lenses or mirrors, or to measure deformation of a body under an applied load.

Although most engineering applications of lasers fall into one of these categories, there are many others represented in this journal which rely on other properties of laser beams. The importance of lasers in many areas is increasing and it can be expected that the journal will continue to be a valuable source of information on this subject.

applications where optical methods can be used to measure a wide range of properties, from velocity to electric current or voltage. Perhaps the most important application of optics nowadays is in optical communications. However, although this topic does not seem to be included in the journal, it is adequately covered by other specialist journals.

This journal is clearly successful in forming a link between academic work and applications in engineering. Although its coverage is more limited than in journals such as *Applied Optics*, and there are obvious overlaps with *Optical and Quantum Electronics* and *Optics and Laser Technology*, its papers are of a high academic standard.

C. J. R. Sheppard

C. J. R. Sheppard is university lecturer in engineering science and fellow of Pembroke College, Oxford.

Chemical niche

International Reviews in Physical Chemistry
edited by A. D. Buckingham, J. M. Thomas and B. A. Thrush
Three yearly
£27.50 per annum (individuals),
£55.00 per annum (institutions)
published by Butterworths
Journal of Computational Chemistry
edited by N. L. Allinger and P. von R. Schleyer
Quarterly
\$101.00 per annum (surface mail),
\$157.00 per annum (air mail)
published by Wiley (New York).

The first question to be asked in assessing new journals is whether they present a distinct role to play in the present, already crowded, scientific literature. To satisfy this demanding test a journal must identify a distinctive subject matter, readership or approach. In these respects *International Reviews in Physical Chemistry* succeeds at least partially in that it provides a new approach and style which could lead to a useful contribution to modern physical chemistry.

No attempt is made to provide a comprehensive survey of recent advances in the subject. Rather, the editors have chosen to highlight certain topics of particular contemporary

interest, and have allowed authors to present comprehensive and detailed surveys. This may lead to authors concentrating on their own work, well done, however, this can be of value. It is often useful to allow research workers in a field to read their own recent work, and a selection of such reviews provides a useful supplement to the existing review literature. Recent topics reviewed include high sensitivity nuclear quadrupole resonance, the pressure tuning of electronic energy levels, and the molecular fine structure in dynamic photophysical processes. The articles are well written and presented. In addition the journal contains a useful set of book reviews. It can certainly be recommended to all wishing to keep abreast of recent developments in physical chemistry, especially in the areas of theoretical chemistry and chemical physics.

Journal of Computational Chemistry, however, is (according to the criteria I have outlined) less successful. Although use of computational techniques in chemistry is a rapidly growing area - and one which, as the editors have clearly realized, covers all theches of the subject - it is difficult to see that there is the need for a new journal for such work. Good papers in the field of computational chemistry can be found several satisfactory existing journals. It is also difficult to see what the journal has identified a readership for. Indeed, there is a danger in the type of new journal in that it may attract a certain number of high quality papers which may not receive the attention they deserve unless the journal is notably successful in competing against the already severe competition.

Despite these difficulties, the journal does seem to have succeeded in attracting good papers. The editorial board is very strong, and the production of subject matter is also good. There is the inevitable high proportion of quantum chemistry, and if the journal is to succeed the editors must ensure that they attract papers from other areas of computational chemistry, for example, molecular mechanics and molecular dynamics. Those with an interest in theoretical computational chemistry, the journal is well worth reading. Whether there is a need for it, however, is an entirely different matter.

Richard Catlow

Richard Catlow is lecturer in chemistry at University College London.



Patented life

Biotechnology
edited by Christopher G. Edwards
Monthly
\$78 per annum
published by Nature Publishing (Macmillan)

This new journal from the *Nature* stable will clearly be a useful guide for academics wishing to bridge the difficult gap between pure research and the industrial application of genetic manipulations. The journal should also provide a convenient monthly digest for commercial companies of activities, both academic and industrial, in the "genetic engineering" field. Those interested in the more chemical engineering and biotechnology, however, will not find much of interest.

The journal has several good features: an excellent gossip section on the latest developments in the application of basic research covering topics from plants to plasmids; and informative

Self and non-self

Immunology Today
edited by J. R. Ingalls
Monthly
£19.50 per annum (individuals),
£36.00 (institutions)
published by Elsevier Biomedical

Quite simply, *Immunology Today* is the best thing that has happened in the journal of immunology for decades. I suspect that virtually all immunologists read it, which is probably true of more than one or two of the numerous other immunological journals, and I am sure most of them wonder, as I do, how they managed before.

Like its sister journal, *Trends in Biochemical Sciences*, it looks attractive and up-to-date, with news on the front page and a discreet use of colour where necessary. The main difference from other journals, however, is that almost all the articles are commissioned by the editorial board - a panel of 16 experts spanning the globe. This results in a flow of topical reviews (of fields as well as meetings and even political developments), critical commentaries, controversies, and highly personal hypotheses. The format is flexible enough to include articles of any length from one paragraph to six pages.

Reading an issue of *IT* gives you the heady feeling of being at an international meeting, and makes "normal" journals with their formalized layout and long publication delays seem almost nineteenth century. Even the book reviews reflect this difference, reviewers evidently feeling free to say what they think in everyday, unstilted language.

Rival editors, however, need not fear unduly, as this new journal is not about to take over the whole field. For one thing, the articles inevitably reflect the editors' concepts of what is exciting and although they are laudably catholic, the same authors do tend to recur. Similarly, certain areas of interest: molecular biology, autoimmunity, natural killer cells, and the major histocompatibility complex.

I do not know how articles are refereed, but I doubt if this will ever be the place to publish definitive breakthroughs. What the journal does show is how much room for diversity there is in scientific journalism. We probably need one journal like this in every field - we certainly need it in immunology.

J. H. L. Playfair

J. H. L. Playfair is professor of immunology at the Middlesex Hospital Medical School.

JOURNALS FROM ACADEMIC PRESS

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Editors H.A. Whitaker
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Editors: In-Chief M.B. Fort and E.G. Roffman
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IMA Journal of Numerical Analysis

Editors: K.W. Morton and M.J.D. Powell
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Editor: Glen Carlo Rota
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NEW JOURNALS

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Editor: T. Galliard
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Waste Management & Research

Managing Editors: R.B. Dean, T.H. Christensen
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1984: Volume 2 (Quarterly)
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Editors: In-Chief E.S. Lennarz and S. Brenner
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1984: Volume 2 (Bi-Monthly)
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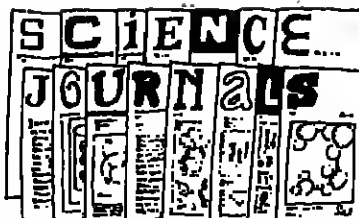
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Global problems

The Environmentalist: the International Journal for all professionals concerned with education, training and communication in every area of environmental protection edited by David Hughes-Evans and J. H. Ahrlich
Quarterly
\$Fr 165 per annum
published by Elsevier Sequoia
Environmental Education and Information
edited by Graham Ashworth
Quarterly
£34.00 per annum
published by Taylor & Francis

Environmental problems have always been with us, but their urgency has only been appreciated by a large number of people in the past 15 to 20 years. In the wake of this new perception of our environment, we have demands that environmental education be developed in schools, colleges, universities and among the public at large. Organizations have been created such as the International Union for the

Pollution monitoring

Environmental Monitoring and Assessment: an International Journal
Editor: G. B. Wiersma and A. T. Sora
Quarterly
\$Fr 143.00 per annum
published by D. Reidel

The environmental revolution has contributed to the proliferation of journals during the past decade. A new journal in this area, particularly one published as a commercial venture and not by a learned society, must be carefully examined. What new features does it have to offer?

Environmental Monitoring and Assessment is the rather ponderous title of a journal now in its third year. It aims to report progress in pollution monitoring, emphasizing scientific principles in the design of monitoring systems for local, regional and worldwide scale. It is also concerned with the implementation of the monitoring systems and the use of the ensuing results to assess pollution risks.

Set against these objectives, volume two (1982) is very good in parts, astonishingly pedestrian in others. This diversity arises from the sources of the material. Parts one and two (together) arise from papers presented at an

Conservation of Nature and Natural Resources (IUCN), conferences have been organized, and projects such as Man and the Biosphere (MAB) have been sponsored.

These two new journals are part of this general movement, and both started publication in 1981. Of the two, *The Environmentalist* is the glossier publication. Designed for a wide readership (the professional, policy-maker, employer, researcher, concerned individual), as is evident by the range and style of articles published, it is liberally sprinkled with photographs which illustrate its articles, or which focus on people who are prominent in the environmental movement.

Environmental Education and Information is perhaps more obviously academic in its format and appeal. It contains a section (the major one) of learned articles which range across the whole field of environmental education, with a balance between articles concerned with environmental problems and those concerned with the teaching of environmental issues. A second section contains information about publications, conferences and educational aids, and there is a final section of book reviews. Some of the articles are illustrated with photographs, but to a lesser extent than *The Environmentalist*.

This latter journal is also divided into sections. The first, called "editorial", has a number of messages from the editors, guest editors and "other persons" such as politicians. The second part consists of "papers" (almost all of them are concerned with the educational aspects of the environment); the third contains news and comments and is journalistic in style; the fourth contains "conference

reports" and conference announcements; and the last part book reviews. It is more self-consciously international in its authorship, whereas *Environmental Education and Information* is somewhat more dependent on British authors. Both journals have impressively large advisory boards drawn from experts from a large number of countries; indeed, some appear on both boards.

Clearly, both journals contain articles and information of interest to those attempting to keep abreast of environmental issues. Only *Environmental Education and Information*, however, is specifically concerned with educational issues, although these are addressed mainly to upper secondary and higher education teachers. Teachers of younger children are more likely to find what they want in the *Bulletin of Environmental Education*.

Both journals go beyond what is offered in such smaller scale publications as *Cornea* (UNESCO) or *Reed* (Council for Environmental Education). They are therefore likely to inform and stimulate those who have a serious interest in environmental education—be these geographers, biologists, chemists, architects or any other specialist. None of the articles seem too technical in their presentation to make them inaccessible to any but specialist readers should therefore be able to understand what is being said and see the relevance of the points being made to his or her work.

Norman Graves

Norman Graves is professor of geography education at the University of London Institute of Education.

powerful tools for testing cost-effective control strategies.

Another theme is pollution assessment—the quantification of exposure response through determination of the relationship between source and exposure, followed by the relationship between exposure and effect, on humans in particular and the environment in general. In this respect, parts one and two are worth reading.

Part four fails to achieve the aims of its grandiose title, for it is proclivous in outlook. Its analysis is bland, and intentions rather than results predominate.

Although this journal has some good points, its uneven quality must surely be a cause for concern.

Malcolm Fox

Malcolm Fox lectures on pollution control at Leicester Polytechnic.

Zeolettis: the International Journal of molecular sieves (quarterly, £80.00 per annum), which was first published by Butterworth Scientific in 1981, continues to cover all aspects of this industrially important group of synthetic, aluminosilicate compounds (inorganic zeolites, for example) now manufactured for their ion-exchange properties. Because of their open crystal structure, they can be used as "molecular sieves".

Inorganic merger

Polyhedron: the International Journal for inorganic and organometallic chemistry
edited by Geoffrey Wilkinson
Monthly
\$500.00 per annum
published by Pergamon Press

To those who have followed Robert Maxwell's attempts to rationalize professional societies in the Oxford area by creating Thames Valley Royal Society and Reading Town football clubs, the appearance of *Polyhedron* will seem a familiar chord. *Polyhedron* represents Pergamon's attempt to create a new and prestigious journal from the *Journal of Inorganic and Nuclear Chemistry* and the *Journal of Inorganic and Nuclear Chemistry Letters*.

As an influential journal in the 1950s, the former published, for example, important papers on the effect by Chatt and Orgel and chemical organometallic molecules by Pipes and Wilkinson. And the latter published short communications; although a new became a premier scientific journal, it provided a useful outlet for papers which did not meet the exacting standards of *Chemical Communications*. During the 1970s the number of papers published in these journals from world class inorganic chemistry laboratories decreased, reflecting policy slackened and the journals declined. Clearly the time has come for a new direction.

First published in 1982, the new journal was named *Polyhedron* in order to emphasize the fact that, coming from the same stable as *Zeolites*, the successful organometallic journal founded by Sir Robert Robinson and R. B. Woodward, Professor Sir Geoffrey Wilkinson—Nobel prize winning inorganic chemist—was appointed editor-in-chief and now all British editorial board was recruited.

The wide variety of papers published in recent issues of the journal reflects accurately the broad nature of modern inorganic chemistry. In addition to those papers reporting results in inorganic growth areas such as organometallic chemistry, organometallic chemistry and the coordination chemistry of macrocyclic ligands, there are papers describing developments in popular areas of transition metal and main group chemistry. For example, recent issues of the journal include papers dealing with superconducting compounds, and the organometallic chemistry of phosphorus and arsenic.

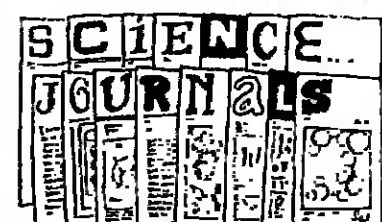
Although much of the journal is devoted to the description of new compounds, there are in addition many papers dealing with the application of spectroscopic and physical methods to inorganic compounds. In particular, inorganic compounds, in particular, there have been a number of papers discussing either the measurement of the stability constants of complexes or kinetic studies of the mechanism aspects of inorganic reactions and the study of specific compounds by infrared, Raman and photoacoustic spectral techniques.

Academic standards have certainly been improved, presumably reflecting a firmer reinforcing policy by the executive editor Professor D. C. Bransford and the journal is more interesting scientifically in its new form. In particular, the journal is more interesting in this regard from publication of papers from members of the editorial board, but in large measure it is a return to the mainstream of inorganic chemistry. The journal has not lost its inorganic flavour, but the number of papers published from major laboratories in the United States was disappointing, perhaps reflecting the pre-eminence of the *Inorganic Chemistry Journal of the American Chemical Society*.

Although *Polyhedron's* team has shown improvement, it is perhaps hard to promote it, it still has some way to go before reaching the first division.

D. M. P. Mingos

D. M. P. Mingos is university lecturer in inorganic chemistry and a fellow of Keele College, Oxford.



Mobile cells

Journal of Muscle Research and Cell Motility
edited by R. T. Tregear, C. C. Ashley and A. G. Woods
Bimonthly
£74.50 per annum
published by Chapman & Hall

For many years the emphasis of research in the general area of motility was essentially limited to the study of muscle. Muscles are often beautifully organized and extensive, especially in striated muscles in vertebrates and insects, and this allowed the rapid application of the new structural and physiological techniques developed in the 1950s and 1960s. Similarly, biochemists could take advantage of the large quantities of protein available for analysis. However, based on the resulting background knowledge about muscle structure and biochemistry, and aided by the advent of new or improved techniques, the past decade has seen the emergence of the general area of cell motility (that is, motility in non-muscle cells) as a flourishing, rapidly growing and almost separate discipline.

In fact, many forms of cell motility involve the interaction of the same major proteins, actin and myosin, as muscular contraction, and in both cases it is the relative sliding of actin filaments and myosin aggregates, driven by the immediate energy source adenosine triphosphate (ATP), which causes movement. In addition, some aspects of the control of activity involve similar regulatory proteins such as tropomyosin and the troponin-like calcium-binding proteins. Even in

John Squire
John Squire is reader in biophysics at Imperial College, London.

Pollution episodes

Environmental Pollution Series B: Chemical and Physical
edited by Kenneth Mellanby
Four issues per volume, two volumes per year
£95.00 per two volumes
published by Applied Science Publishers
Chemistry in Ecology
edited by E. J. Perkins
Four issues per volume block
£161.00 per volume
published by Gordon & Breach

The most challenging area of current environmental research concerns the ecological implications of man-made pollution—a topic of interest to both these international journals, although they approach it in contrasting ways. Strictly speaking, *Environmental Pollution* is not a new journal, as it first appeared in 1970, but after a decade of publication the pressure of papers on biological matters warranted division into series A (ecological and biological) and series B (chemical and physical), the latter now having an established reputation for high-quality, refereed research papers on a wide range of atmospheric, aquatic and terrestrial pollution problems, which need not be chemical in nature, as physical aspects such as noise pollution, thermal pollution and plastics disposal are also considered important. Work of a biological nature is included in series A, although discussions of the ecological impact of the different forms of pollutants are preferred for series B.

The journal also encourages papers with an emphasis either on the distribution of pollutants or new techniques for their study and measurement. In many respects, its aims and contents are very similar to *Water, Air, Soil Pollution*, which also contains many papers on pollutant distributions. Apart from major pollution episodes, this type of study is of limited value, as it reflects purely local conditions, which are of little interest to the international scientific community.

those aspects of cell motility which centre on microtubules rather than actin and myosin, it seems that motility is caused by an ATP-driven "sliding microtubule" mechanism which may in some ways be analogous to the "sliding filament" mechanism in muscle.

An attraction of this new journal is that it recognizes the enormous overlap of these two aspects of motility and it provides the possibility of further cross-fertilization. In the three years since its inception in March 1980, the journal has contained a mix of substantial original papers spread across both disciplines, although to date, despite the good intentions of the editors, it has been rather heavily weighted towards motility. To increase the cell motility content of the journal, the two original editors recently co-edited Dr Alan Woods (of the MRC Laboratory of Molecular Biology, Cambridge), a one-time muscle biochemist, now switched to cell motility, and with his support they are actively seeking more contributions on cell motility. Nevertheless, there seems to be no dearth of papers on muscle, and 1983 sees an increase from four to six issues per year.

Most papers are accessible to a broad readership and the presentation in all subject areas is good. In addition to the original papers in the journal (and one must admit that, as in most publications, there are occasional exceptions to the usually good scientific standard) there have also been several invited review articles which have generally been timely, well-written and interesting. Also included have been reports of meetings and workshops on muscle and motility, occasional editorial comments and very occasional book reviews (once again of mixed quality). The journal also reproduces in full each year the contributed abstracts of the annual "European Congress of Muscle and Motility"—a very useful service.

This journal has great potential and has made a good start.

John Squire

John Squire is reader in biophysics at Imperial College, London.

Many current research programmes are focused on the evaluation of the mechanisms and rates of pollutant transfer, inferred from measurements on natural systems. The quantitative information gleaned from these studies is crucial to the development of predictive ecosystem models and there are too few papers in this journal reflecting the present trends.

Chemistry in Ecology, first published in 1982, entered the academic arena with some bright, new ideas. Its aims are to publish refereed research papers of work carried out by both chemists and ecologists and to foster interdisciplinary study, so desperately needed in the solution of complex environmental problems.

This is especially true in the study of natural waters, where chemists and ecologists have tended to work in isolation. For many chemists the ecosystem is still something of a "black box", even in a well researched area like nutrient chemistry. The emphasis placed by the journal is less on pollutant distributions and more on fundamental studies to include theoretical treatments of the influence of chemical state on biological activity.

As these aims have a lot in common with highly regarded journals such as the *Journal of Ecology* (mainly plant ecology) and the *Journal of Experimental Marine Biology and Ecology*, it may prove difficult to persuade researchers to change their established publishing patterns. Indeed, this was evident in the first volume of *Chemistry in Ecology* which contained many papers with a strong marine flavour; and in an annual review the Editor made it clear that a wider view of ecological problems is preferable. One important advantage of this journal is its rapid publication time, as authors can submit their manuscripts in a camera-ready form.

This journal is potentially very useful, and provided the papers are of a high standard with a distinctive character, it should find its way into many libraries and laboratories.

Geoffrey Millward

Geoffrey Millward is senior lecturer in oceanography at Plymouth Polytechnic.

Laser spectrum

Laser Chemistry: an International Journal
edited by R. J. Vetter et al
Bimonthly
£97 per annum
published by Harwood Academic (Gordon & Breach)

When I graduated in 1955 the first laser was still five years away, the first tunable laser, the first ultraviolet and infrared lasers still further away, and even the notion of lasers reaching towards the x-ray region was thought impossible until well into the 1960s.

Now lasers are ubiquitous, covering a broad swathe of the electromagnetic

spectrum, penetrating almost every aspect of scientific inquiry and still generating excitement and potential for new applications and development. Their impact on the fields of chemistry, chemical physics, spectroscopy, atomic and molecular physics and increasingly, in biology, has often been revolutionary. "Laser-free spectroscopy" is a rarity at gatherings of research spectroscopists, while conferences on the dynamics of chemical reactions, and on photochemistry and photobiology, have been transformed by the laser revolution.

In such circumstances, the current research journals may respond by introducing laser-related sections in their contents or they may become almost wholly devoted to laser development and applications especially where the urgency and competition is felt most acutely. At their best these convey the heady excitement of new fields for which the researcher craves; at

their worst, they can develop into "Journals of Breathless Communications" as the excitement degenerates into an unthinking hysteria. An alternative and more mature response is to introduce new specialist journals that provide an ordered outlet for the flood of new research, and this is the aim of the editor of *Laser Chemistry*, a new journal "intended to bridge the gap between physics and chemistry laser-related research".

With the ferment of activity in laser research and the quality of its international board, this new journal should rapidly gain momentum and respectability. It might not to lack potential authors once established.

J. P. Simons

J. P. Simons is professor of physical chemistry at the University of Nottingham.

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Editor-in-Chief: A. Ralston
(1984, Vol. 1, 4 issues: DM 46,-/approx. US \$ 18.00)

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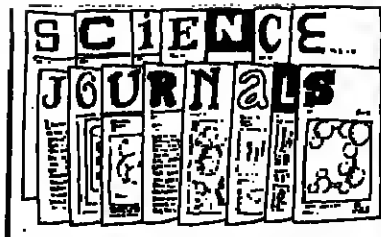
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Individual fruits

Personality and Individual Differences
edited by H. J. Eysenck
Bimonthly
\$75 per annum
published by Pergamon Press

Individuals are not identical. Some experimental psychologists in search of simple empirical results are often defeated by this ugly fact; whereas correlational psychologists who investigate differences in cognition, personality, or social behaviour among people readily take up the challenge to discern order in their complicated sets of observations. However, they all too often fail to make use of controlled experiment, and the hypothetico-deductive method in the explanation of their results.

Personality and Individual Differences, a journal founded in 1980 by its influential editor-in-chief, provides a home for reports of research into the structure and development of personality, and the causation of individual differences. Thus, it seeks to publish papers which combine both the experimental and correlational approaches to the study of individuals. Preference is given to work based on good theoretical foundations, and there is a special interest in genetic and environmental factors and their interaction as causes of psychological differences.

Each issue of the journal contains about ten main articles, addressing topics such as neuroticism, extraversion and openness to experience; classical conditioning and socialization; multivariate comparison of the intellectual performance of black and white children; and personality and the perception of television violence.

A second section, "notes and shorter communications", then presents empirical findings of moment and potential theoretical importance. Discoveries range from the insulting: France has the lowest mean IQ in comparison with 20 other European countries, through the startling: psycholism (like neuroticism) may impair marital satisfaction, to the waggish: a relatively short forefinger is indicative of assertiveness in women, though the relationship is small in magnitude.

Most issues include a useful "special review", often written by Professor



Eysenck. A book reviews section is carried in all issues and provides helpful criticism of recent volumes including those not written in the English language (not all American). An indication of the considerable enthusiasm which the journal has stimulated in the psychological community is that it originally appeared quarterly. It should certainly be read by any psychologist who claims to have a serious interest in the scientific examination of individual differences.

R. E. Rawles
R. E. Rawles is lecturer and departmental tutor in psychology at University College, London.

Cognitive disability

Brain and Cognition
edited by Harry A. Whitaker
Quarterly
\$54.00 per annum
published by Academic Press

Just as the rapid growth of interest in cognitive psychology in the 1960-70s resulted in the establishment of a handful of well-used journals with cognition as their focus, current interest in cognitive disability is being matched by outpouring activity. A number of prestigious journals are already publishing in the area of what might be called "cognitive neuropsychology", and they do not always contain a full complement of first-rate articles. If this is due to the absence of sufficient research of the appropriate quality, then the new journals will run a risk of early dismissal as editors succumb to pressure to fill their pages.

The growth of interest is, as the

editorial in the first issue of *Brain and Cognition* admits, only partly due to a wide theoretical interest in the failure of cognitive function. Technical advances in imaging brain and brain processes have resulted in methodological sophistication, and the neurological substrate of cognition can now be investigated. The editorial traces the development of *Brain and Cognition* as an offspring of the well-developed *Brain and Language* (volume one, 1974), in response to a need for an outlet for non-linguistic research. Research to be covered in *Brain and Cognition* will include human motor and sensory functions, emotion, visual-spatial processing, attention, and memory, as contrasted with brain structure and function. This research will be conducted with normal or brain-damaged populations, will include studies of cerebral laterality, sex and age differences, and will take the form of experimental studies, case histories, and theoretical reviews. Occasional special issues are promised, to deal with single topics within this domain.

The first volume (1982) looks on-couraging, and although approximately half the papers are concerned with cerebral laterality and related issues such as handedness, it does not look like becoming just another journal of hemispheric differences. It contains interesting and useful articles on a wide range of problems including synesthesia, neuropsychological correlates of Parkinson's, Huntington's, and Alzheimer's diseases, prosopagnosia, relationships between cerebral blood flow and cognitive activity, and more on the effects of lateral eye fixations upon verbal and spatial processing.

Geoffrey Underwood
Geoffrey Underwood is lecturer in psychology at the University of Nottingham.

Classroom behaviour

Educational Psychology: an International Journal of experimental educational psychology
edited by Richard Riding and Kevin Wheldall
Quarterly
£22.00 per annum (individuals), £44.00 per annum (institutions)
published by Carfax Publishing, P.O. Box 25, Abingdon, Oxon OX4 1LR

The main aim of this journal, which was started in 1981, is to provide an international forum for the discussion of research findings in psychology relevant to education, in particular, the experimental and behavioural studies. On the basis of a perusal of the recent issues, it can be said that the editors are achieving their purpose admirably. The articles, coming from many different countries, are scholarly, up-to-date and well documented. Although the reports of experiments pay careful attention to statistical detail, they are in general clearly presented and not difficult to follow.

The journal has a wide coverage including papers on such varied topics as the effects of experimental situations in classroom settings; the influence of language strategy in language learning; learning hierarchies; consequences of teacher praise and criticism. (Also, it usually has a section of book reviews.) It does not differ greatly from, say, the *British Journal of Educational Psychology*, although a number of contributions reflect the strong interest of the editors in applied behaviour analysis in education (or, as it is called, "behavioural pedagogy") and in encouraging a less restricted view of behaviour modification than has been the case hitherto. Furthermore, although the journal aims to concentrate primarily on "normal" children, it includes a lot of space to the application of systematic behavioural methods to pupils presenting learning or behavioural difficulties in the classroom.

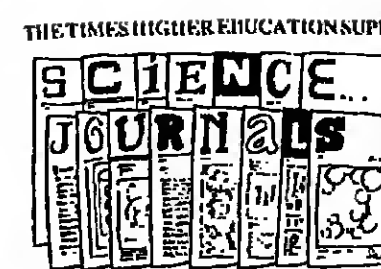
The whole of one double issue (volume two, numbers three and four, 1982) is devoted to articles and discussion papers on behavioural pedagogy. It is the editors' intention to continue to devote one of the issues each year to a specific topic. This seems a good idea, allowing greater depth of treatment and more opportunities to stimulate discussion. The editors are anxious that they should receive some feedback and that they should be a real dialogue between writers and readers; they say that they have not to date succeeded in this aim but they have not yet given up trying.

Authors of scholarly papers on topics relating to educational psychology often have to wait a long time before their work is considered for publication. An additional problem appears in print. An additional problem in this area is therefore to be welcomed, particularly one which gives high priority to speeding up the publication process, difficult as this is in a field where the submission of articles has to be a useful primary source for educational researchers, and teachers willing to make an effort to turn to it will find much of practical relevance in a number of papers, especially those which account of work with children of special needs.

Maurice Chazan
Maurice Chazan is professor of education at the University College, Swansea.

Elsevier Biomedical publishes two journals in the behavioural sciences. *Behavioural Brain Research*, published monthly at £180 per annum, is devoted to interdisciplinary studies of brain mechanisms underlying behaviour. *Behavioural Brain Letters*, published bimonthly at £120 per annum, contains itself with the experimental analysis of the behaviour of animal or human subjects. In fact, this somewhat eclectic journal is devoted predominantly to studies of operant and classical conditioning in animals.

Paul Light
Paul Light is senior lecturer in psychology at the University of Southampton.



Molecular biology

Molecular Physiology
edited by R. Gilles
Bimonthly
£140.00 per annum
published by Elsevier Biomedical
Cellular and Molecular Neurobiology
edited by David O. Carpenter
Quarterly
\$57.00 per annum
published by Plenum Press

As a graduate student of comparative physiology in the late 1950s, I found little difficulty in keeping abreast of current research publications in my field, although I suffered some criticism from my senior colleagues for my supposed narrow perspective of biology. The term "molecular" had yet to become that overused and oft-abused adjective which characterizes much of the present scramble for research funds, although "neurobiology" was already an endowment of my trendy new world equivalents.

I point this cosy picture not to savour the past, for I dislike nostalgia, but to contrast life as a comparative neurobiologist (then physiologist) as it was then and is now. The expansion of biological research, and in particular

Fault lines

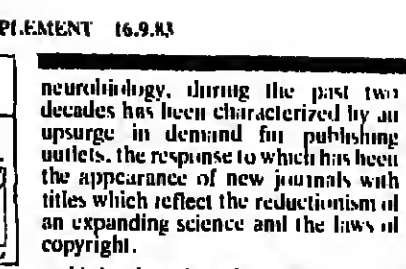
Earthquake Prediction Research
edited by Tsuneji Rikitake
Quarterly
£11.70 per annum (individuals), £11.70 per annum (institutions)
published by D. Reidel
First Break
edited by Ian Williamson
Monthly
£25.00 per annum
published by Blackwell Scientific

The number of one-off publications arising from conferences on earthquake prediction has grown enormously in recent years, but because the subject involves contributions from geological sciences, sociology, economics and biology there has been no international periodical that could embrace such diverse interests. As a result, some rather important works on animal behaviour and the socioeconomic effects of earthquakes have been confined to workshop or government reports with small circulation.

Earthquake Prediction Research aims to end this situation by providing a medium for all papers on the technology of earthquake prediction and its socioeconomic effects. It will not, however, deal with specific predictions. Case histories, reviews and raw data, especially where not otherwise available in English, are all welcome. On the evidence of the first three issues, it seems that the editors have not been successful in attracting interdisciplinary articles. Perhaps this is because, although the journal has a distinguished editorial board, it is heavily biased towards geophysics. Of thirty articles that I examined only three, on earthquake forecasting and planning countermeasures, on international experimental sites for earthquake prediction, and on analysis of warning systems, would not have been quite at home in conventional geophysical journals.

The articles are generally research level and are of a high standard. However, there are many typographical errors, suggesting that some stage of production is being rushed. Only two issues for 1982 have actually been published at the time of writing, so perhaps the entire production schedule is out of joint.

First Break, launched under the aegis of the European Association of Exploration Geophysicists, aims to fill another gap in the geophysical literature arising from the fact that many



neurobiology, during the past two decades has been characterized by an upsurge in demand for publishing outlets, the response to which has been the appearance of new journals with titles which reflect the reductionism of an expanding science and the laws of copyright.

Molecular Physiology and its sister journal *Cellular and Molecular Neurobiology* are truly representative of these "new wave" publications. Both have been in existence for almost three years, both are attracting and publishing good research papers, and there is no reason to question their important role as research communicators. Their titles may seem flamboyant and perhaps do not accord fully with their contents. I doubt whether they are purchased by many individuals, but their presence on the shelves of libraries in universities and polytechnics gives us an opportunity to sample the richness of animal life which is not always conveyed by some of our more er, esteemed journals in physiology and biochemistry.

Molecular Physiology publishes papers on the molecular mechanisms relevant to general, preclinical and environmental physiology, with a comparative emphasis. In its interests are in comparative physiology and biochemistry. Botanists and microbiologists are to be forgiven for thinking that they have an outlet here; their papers are not excluded, but the emphasis is explicitly on molecular mechanisms relevant to animals. Must of its papers could be housed equally happily in a number of other publications such as the *Journal of Experimental Biology*, the *Journal of Physiology* and the *Journal of Comparative Physiology and Biochemistry*. However, the demand for journal

articles is inaccessible to the average reader because they are either too mathematical or too narrowly specialized. Potentially, all branches of geophysics can be included in the journal, but all the issues available to me were overwhelmingly concerned with seismology. The articles were, nevertheless, very clear and well presented with first-class graphics and layout. They should be comprehensible to most geological scientists.

In addition to scientific papers, *First Break* contains news, product information, book reviews, and oases with the affluence of the oil industry in its full page, full colour advertising. This magazine can be read by those with an interest and readability, but if the focus on seismology is maintained then most interest in *First Break* will come from the oil industry. There is little in the magazine of present to interest other geophysicists. In some issues, as much, if not more, space is devoted to advertising as to scientific articles. Most issues contain just two of the

papers submitted by colleagues. The result is a journal that has carved for itself a secure niche and which shows every sign of academic health.

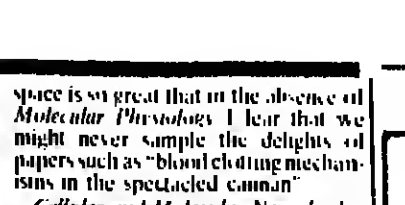
The whole venture has profited from a growing and active field of research and a glance at the contents of recent issues reflects the wide spectrum of contemporary climatology. Each issue contains five or six lengthy papers together with reports of meetings, book reviews and a short section of recent climatic maps. The latter section can be criticized for being too short and containing material which can be found elsewhere, and could either be expanded or deleted.

Quality of papers and their presentation is uniformly high and the journal has already achieved the enviable position of being essential reading for any climatologist seeking to keep abreast of modern developments. It is clear that papers which will become classics and thus widely cited are being attracted to the pages of the journal. The occasional perceptive editorial might be a useful addition to the journal and make it even more a forum for leading and guiding research.

This journal provides an excellent example of how collaboration between a learned society and an academic publisher can produce a successful journal.

Allen Perry
Allen Perry is lecturer in geography at University College, Swansea.

Oil and Petrochemical Pollution is published quarterly by Graham and Trotman at £35.00 per annum.



space is so great that in the absence of *Molecular Physiology* I fear that we might never sample the delights of papers such as "biocleaving mechanisms in the spectated cannon".

Cellular and Molecular Neurobiology publishes research articles concerned with the analysis of neuronal and brain function at the cellular and subcellular levels. Its editorial board reads like a "who's who in neurobiology", which perhaps accounts for the high quality of some of its contents. This journal also publishes review articles by senior scientists, which can lighten the load of the overtaxed academic struggling to keep his head above the rising flood of neurobiological information. The journal emphasizes the cellular as opposed to the organismal (sorry, neuroethological) approach, but I remain less convinced about its molecular credentials. Although there is a host of journals, old and new, publishing papers in this area, some of which also specialize exclusively in neurobiology, *Cellular and Molecular Neurobiology* is quickly establishing itself as a leading journal in its field.

The narrow, well-tit mud on which I started my career has expanded to a multi-lane highway with ill-defined borders. I suppose it is time to put on my blinkers and hope for the best. At least, I can be comforted in the knowledge that journals like these two are providing me with a greater choice of reading material. I am rather worried, however, about the titles of the next "wave" of new journals.

P. N. R. Usherwood
P. N. R. Usherwood is professor of zoology at the University of Nottingham.

Both journals have attempted to distance themselves from contemporary refereeing conventions, though not abandoning them entirely. The first offers to consider articles that might be rejected by other geophysical journals as being too speculative or inconclusive, and the second promises a flexible, but unspecified, review policy. These are good ideas, totally consistent with the journals' aims.

Although these new journals have so far been unable to break the traditional mould of their predecessors to an extent that would justify their publication, I hope the contents of later issues will be more in tune with their stated aims. They might then deserve widespread support.

Barry Atkinson
Barry Atkinson is a NERC Special Research Fellow at Imperial College, London.

Changing climate

Journal of Climatology
edited by S. Gregory
Quarterly
£42.50 per annum
published by Wiley

For many years the Royal Meteorological Society produced two "house" journals, the popular monthly *Weather* and the more scholarly *Quarterly Journal of the Royal Meteorological Society* which contains larger, more substantial research papers. Although articles on climatology appeared from time to time in both, they were also spread through a dozen or more other journals. The need for a forum for gathering together the fruits of climatic research became increasingly apparent over the years and finally in 1981 the society joined forces with Wiley to launch this new journal.

Establishing a new journal is always an act of faith and the success of the venture depends not only on building up a loyal readership but also on attracting a steady stream of papers of merit. The new journal has succeeded on both counts, largely due to the energy of its editor and the high calibre of the international editing team that he has established. It has attracted in the first two years of its life a wide degree of support from the climatic community, who have submitted a continuing supply of top-quality papers, as well as acting as referees of

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BOOKS

Nature of numbers

Frege's Conception of Numbers as Objects
by Crispin Wright
Aberdeen University Press, £12.50 and £8.50.
ISBN 0 90030352 8 and 0257267

Frege opens his masterpiece *Die Grundlagen der Arithmetik* by asking "What is the number one? What do we mean by the sign '1'?" and by deploring the fact that mathematicians and philosophers alike have either failed to confront such questions or have produced answers to them which are demonstrably false, incoherent, or unintelligible.

"Is it not a scandal," Frege asked about arithmetic, "that this science should be so unclear about the first and foremost among its objects, and one which is apparently so simple? Small hope, then, that we shall be able to say what number is." In the *Grundgesetze* Frege therefore embarks upon an investigation into the most basic concepts and principles of arithmetic in order to end this scandal and bring intellectual probity and rigour to the foundations of the science.

According to Frege the natural numbers are "logical objects" — a thesis in which are amalgamated the two fundamental tenets of his philosophy of arithmetic: his platonism and his logicism. Platonism is the doctrine according to which numbers are self-subsistent abstract objects. Numbers, on this view, are as much a part of objective reality as are planets, plum puddings and people: they exist, possess properties, stand in relations one with another — and they do so, moreover, totally independently of all human beliefs or thoughts about them.

Of course, as abstract objects, numbers are not spatio-temporal entities; they possess no causal powers, and are therefore incapable of being perceived. Nevertheless, Frege believed, this in no way threatens their status as objectively and independently existing objects: it is merely our naive prejudice in favour of the concrete and the perceptible which makes us reluctant to acknowledge them as such.

Frege's platonism immediately creates a problem: if numbers are abstract, they are causally inert and cannot affect us either perceptually or in any other way. How then can we possibly have any knowledge or awareness of them? Some account must be provided of the nature of our cognitive access to the denizens of the world of abstract objects, at least if Frege's theory is not simply to culminate in a mystery. His logicism, according to which the concepts of arithmetic can be defined in purely logical terms, is in part his attempt to solve this problem.

Roughly speaking, it is through pure reason and the exercise of our logical faculties that we gain access to the realm of arithmetic. This is possible because all arithmetical truths are in fact logical truths: they are knowable a priori, and hence require no direct perceptual or intuitive experience of the objects they concern. The problem misconceived when expressed as the question: How do we have understanding and knowledge of, say, the number one, the set of the individual numbers, considered in isolation? Rather, we should ask: How do we have understanding and knowledge of the fact, say, that one is a prime number, that is, of the truth of arithmetical?

In Frege's hands, then, the focus of the inquiry shifts from our grasp of isolated singular terms, like "the number one", and the objects they stand for, to our grasp of whole sentences and our knowledge of the truths they express. This shift of focus is embodied in Frege's so-called "context principle", that we should not ask for the meaning of a word in isolation; for "a word only means something in the context of a sentence".

Professor Wright's monograph deals with all these doctrines and themes. His first three chapters investigate Frege's platonism; the first deals with the context principle; the second with Frege's notion of an abstract object; and the third with Frege's account of

numerical identity. Wright's fourth and final chapter concerns the relation of number theory to logic, and offers an interesting defence of number-theoretic logicism (that is, a derivation, in outline, of the Peano axioms using only the concepts of higher-order logic with identity).

However, the book is by no means an introduction to or commentary on the text of the *Grundgesetze*. Wright believes, quite generally, that to understand any philosophical view involves knowing what can best be said on its behalf, and in vindication of this belief his book composes a sustained, sophisticated and powerful defence of the programme of the *Grundgesetze*. We know, of course, on the basis of results from Russell, Gödel and others, that certain parts of this programme are simply indefensible and must be jettisoned.

Clearing a patch

Morality and Language
by G. J. Warnock
Blackwell, £17.50
ISBN 0 631 13098 5

Geoffrey Warnock offers in this book, with characteristic expressions of modesty, a collection of his papers from the 1950s to 1980. They fall into four groups. There is, first, a group of five essays on epistemology, mainly on truth and illusion; secondly, three on ethics; and thirdly, three on historical character or doctrines, intriguingly juxtaposing Hobbes, Kant and J. L. Austin. Only one essay on perception and another on Hobbes's account of liberty are published for the first time.

In his short Introduction Mr Warnock describes the papers as "a useful specimen of what was being written at a certain date by a certain kind of Oxford philosopher". To those, like myself, who recall the origins in the 1950s of most of the earlier papers that description will be highly evocative. It will bring to mind, as Mr Warnock explains, a style of philosophy strongly influenced by Austin in which obscurity was to be avoided and in which small points clearly stated were preferred to the high style of the Idealists or the deep-mystery-mongering of (for example) Heidegger. There was at that time he says a certain distrust of "theories" and a suspicion of technical terminology, of "formalism".

It is hard to believe that the essays are presented merely as a social document of a past era. Perhaps Mr Warnock has his eyes on the recent developments of philosophy in which many of these precepts have been either disregarded or repudiated. Even if that development, however, few will disagree with the need to resist a perennial temptation towards obscurantism in philosophy by stating views and arguments clearly and simply. In recalling that lesson Mr Warnock's papers are indeed useful.

But they are useful also in another way which he may be less willing to admit. For they bring out rather clearly some of the inherent weaknesses in his own style of philosophy. It is easy to find in the essays grounds for querying certain of his precepts.

In the first paper on phenomenology, for example, the point turns essentially on a distinction between sentences, uses of sentences, and propositions. In the context, these are naturally taken as technical terms, but they receive no technical explanation. In the previously unpublished paper on perception, "proper objects" of verbs of perceiving are in which Mr Warnock uses the term "proper objects" in a way which is never brought clearly to bear on it is, for example, Austin's *Sensibilia*. In the paper on Kant it is assumed that Kant unequivocally held a two-worlds view in which one world (that of reason) could have no effect on the other (that of bodily movement). Kant really held such a view in the 1780s?

The paper on Austin's accounts of "performative" utterance assumes that if a convention of some game involves an utterance with force, that the convention cannot be linguistic. We would not accept such a principle, where, for example, a term's dictionary definition was fixed by the rules of the game. Why, then, should we accept it for force? In that same paper Mr Warnock

endorses the idea that explicit performatives have a truth value. His arguments for this are no more conclusive than others that have been put forward, but they might be supported by the theoretical economy of including such utterances within a truth conditional account of sense. Mr Warnock briefly notices some such payoff, but declines to pursue it. In general, too, in the papers on language much weight is put on an intuitive conception of meaning in order to provide the required contrasts with the ideas of "use" and "force". Yet all these notions in the relevant contexts have come to be used as technical terms.

Most of these weaknesses are a direct result of that shying away from theory, that suspicion of formalization, which Mr Warnock admits. It is this which explains the frequent feeling that the essays, lucid as they are, seem often to miss the target. There is a still more important lesson. It is, first, that one scarcely can dispense with some technical apparatus in philosophy; second, that it is really an illusion that Mr Warnock does dispense with such aids. In all the papers there is a technical apparatus on which the common sense conclusions rest. The objection is not that the apparatus is there but that it is too retiring.

There is a natural comparison between Mr Warnock's writing and that of C. E. Moore. Both had the conscientiousness of clearing a cultivable patch in the philosophical jungle. In Moore's day the jungle was all-encompassing, and Moore's (and others') efforts blazed a large clearing in which successful cultivation has since flourished. Mr Warnock's reference to the high style of the Idealists suggests that he is still fighting these old battles. He has meticulously and insistently weeded a further patch, but it does not seem destined for large-scale cultivation.

Graham Bird

Graham Bird is professor of philosophy at the University of Manchester.

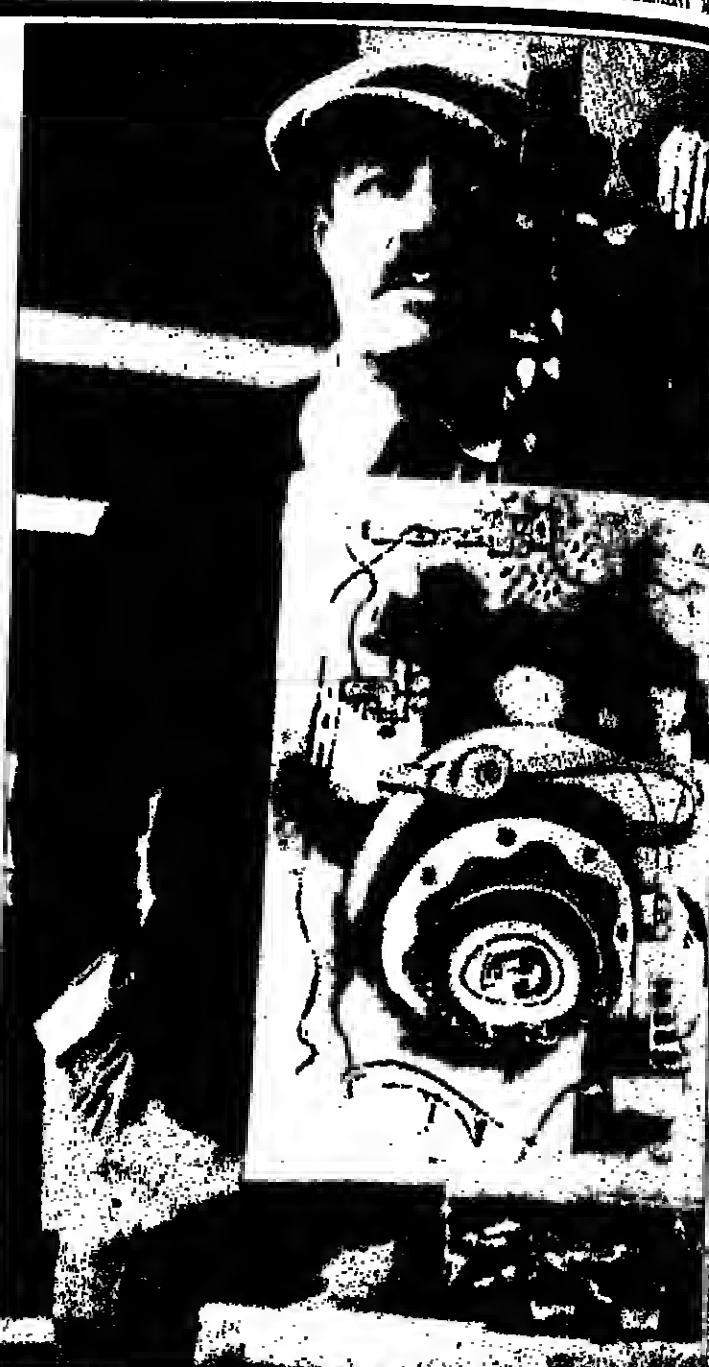
Free to choose

An Essay on Free Will
by Peter van Inwagen
Oxford University Press, £18.00
ISBN 0 19 824624 2

Free Will
edited by Gary Watson
Oxford University Press, £4.95
ISBN 0 19 870344 3

The main argument for free will may well be that we believe we have it. But if we were to discover that a band of Martian scientists had visited the earth and implanted in our brains neural electrodes that fully programmed our behaviour while leaving us with the illusion of choice, and deliberation, would we then persist with our claim? The implanted electrodes are a recurring theme in both Peter van Inwagen's book and in the set of essays on free will edited by Gary Watson. It is an important, if not probable, hypothesis of our psychology that convictions about free will are not rational, but are implanted in us by our brains.

The paper on Austin's accounts of "performative" utterance assumes that if a convention of some game involves an utterance with force, that the convention cannot be linguistic. We would not accept such a principle, where, for example, a term's dictionary definition was fixed by the rules of the game. Why, then, should we accept it for force? In that same paper Mr Warnock



Fernand Léger photographed in his studio in 1930, taken from Peter de Paul's book about that artist published yesterday by Yale University Press at £24.50.

as a reformed rational being?

Inwagen's difficult, complex but impressive book moves through the full range of these and related issues to arrive at the conclusion that it is our psychological conviction of moral responsibility that justifies our belief in free will and a repudiation of determinism. Not, as Dr Johnson said, "Sir, we know our will is free and there's an end on't" but "Sir, we know people may be praised or blamed for their actions, so they must have been free to choose them or avoid them." — this, via the logical principle that "ought" implies "can".

The technique of appealing to common sense to cut away the ground of a philosophical argument is not unfamiliar in philosophy. It makes its appearance again in the second of these two books in the essay by Norman Malcolm in which he claims that mechanistic explanations of human behaviour — the kind that might be favoured by a behaviourist — are logically absurd, since the mere expression or formulation of such theories in speech is itself a counter-example to their truth. In the same volume, however, Daniel Dennett, considering the question whether mechanistic explanations necessarily displace purposive ones, argues that the two types of explanation are in the end compatible.

This is a good example of the way in which claims by one author in this collection constitute a focus or at least a reference point for another, so that the reader can obtain a perspective on a continuing philosophical debate. Peter Strawson's essay reminds us that human relationships and human society would be unintelligible without what he calls "personal reactive attitudes" — of Inwagen's position. And while Herwig Frankfort attempts a solution in terms of two levels of desires claiming that "a person's will is free only if he is free to have the will he wants", Gary Watson argues that it is not a matter of whether "what one most wants and what one most values" — a concept which comes in Charles Taylor's hands the notion of being able to want of choice to be a certain kind of person.

Brenda Cohen

Brenda Cohen is lecturer in philosophy at the University of Surrey.

BOOKS

Men of iron

Solidarity, the Analysis of a Social Movement
by Alain Taurains, François Dubet, Michel Wiewluka and Jan Strzelocki
Cambridge University Press, £20.00 and £6.95
ISBN 0 521 25407 8 and 27595 4

Mass movements are notoriously difficult to analyse. How can social scientists using traditional survey methods hope to capture the complex nature of a social movement evolving rapidly in a situation of upheaval and flux?

To overcome such problems a group of French sociologists around Alain Taurains have developed a technique they call "sociological intervention". Researchers present small groups of activists with propositions about the movement of which they are part in order to open a process of self-analysis and discussion through which the propositions and hypotheses are refined or changed. After the activists have seen a further period in the field the procedure is repeated. Ideally "intervention" thus not only clarifies the researchers' analysis, it also affects the way in which activists think and behave.

Working with Polish sociologists, a team led by Taurains applied this technique to groups of grassroots Solidarity activists between the spring and autumn of 1981. Their findings are presented in the form of both academic analysis and reports summarizing group discussions. So interesting are these discussions that one wishes more extensive accounts had been included. Still, the volume as it stands provides a lucid and stimulating secondary analysis as well as invaluable primary material on Solidarity.

The study displays some of the drawbacks of the intervention method. Even though carefully selected from six key Solidarity centres — Gdańsk, Katowice, Warszawa, Szczecin, Łódź and Wrocław — 58 militants can hardly be treated as representative of a ten million strong movement. Too often generalizations are made from group opinions to Solidarity as a whole without noting the differences separating militants from leaders and, on occasion, from the mass membership. Other methodological problems, linked with the nature of group discussion and group dynamics, are managed successfully.

Solidarity emerges, not surprisingly, as an amalgam of trade union, democratic and national movements and tendencies. Where the study breaks new ground is in analysing the complex and shifting nature of the Solidarity movement, particularly the significant variations between regions and over time.

In the Baltic ports Solidarity was primarily a social movement for free trade unions and for the creation of democratic conditions in which they could operate independently. Warsaw activists, on the other hand, saw Solidarity more as a movement to free society from the stifling grip of the Communist Party-state by means of democratizing political and economic reform, including factory self-management, while for militants in Katowice and to a certain extent in Wrocław and Łódź — Solidarity meant a working-class, trade union-eum-populist nationalist movement combating exploitation of Polish workers and of Poland alike.

The regional perspectives held true into 1981, but as economic and political crisis mounted through the summer and autumn so the centre of gravity shifted, from unions and democratic reform towards retrenchment in a defensive populist nationalism. The group discussions illustrate graphically how, intertwined within the sense of ordinary working people against the corrupt bigwigs — and Solidarity's movement — these fuelled the movement from inception to suppression.

In assessing the forces shaping Solidarity the authors of this book give national and international dimensions in particular, less prominence than it deserves. Instead they highlight the democratic reform aspect of Solidarity,

perhaps because they find it more attractive. For them, Solidarity was a social, non-revolutionary movement striving to achieve from below what in Hungary Kádár has accomplished from above. Such parallels are misplaced: the establishment of free trade unions in itself went far beyond anything Kádár has sanctioned. To deny that Solidarity was revolutionary is to elevate policy intentions above political realities. For however genuinely Solidarity leaders may have tried to work within the limits set by the "leading role" of the Polish United Workers' Party (and of course by Poland's objectives and momentum of the movement broke those bounds. A central thrust of Solidarity's efforts, as seen by all the activists in these groups, was to eliminate the party's undemocratic domination of factory, office and society. Coupled with the autumn calls for free elections this meant the dismantling of the established system of

Spiral of violence

Argentina under Perón, 1973-76: the nation's experience with a Labour-based government
by Guido di Tella
Macmillan, in association with St Antony's College, Oxford, £25.00
ISBN 0 333 28085 7

Ten years ago Perón was welcomed back from exile by millions of Argentines, most of whom hoped for both reform and stability. The easy optimism soon faded, giving way to despondency, political frustration and a spiral of violence. Perón died after a final presidency of under ten months and the subsequent government of his third wife Isabel was faced with major guerrilla campaigns, mounting labour unrest and hyperinflation, all of which served as convenient pretexts when the army seized power in March 1976.

Professor di Tella's book is one of the first attempts to analyse that turbulent period. Its title is misleading, for the book deals with years marked by Perón's absence as well as his presence, and it provides primarily an economic interpretation. Di Tella rejects the common view that the Peronist failure of 1973-76 was the inevitable outcome of the internal contradictions of a populist coalition when, against economic adversity, instead his argument emphasizes the damaging effects of successive attempts to take control of the government by Peronism's left and right wings.

Di Tella's early comments on the nature of Peronism contain several perceptive observations, though in places they require prior knowledge of recent Argentine history on the part of the reader. Unfortunately there is some carelessness over matters of fact (Perón was not a candidate in 1962, the final Justicialista formula having been Frimlin-Angelica; Cooke led the Peronist resistance until 1959, not 1969; and it is untrue that the Montonero guerrillas refrained from criticizing Marxist guerrilla actions against Perón's government).

This does not detract from the excellence of the central economic analysis. Di Tella provides an incisive account of the abortive structural reforms of 1973-74 before analysing various efforts to stabilize the ailing economy. Though himself deputy economy minister for several months in 1975-76, he blames Peronist economic measures as well as the growing external inflationary pressures for the deepening crisis.

Di Tella argues persuasively that the hyperinflation of 954 per cent over the final 12 months cannot be explained solely in terms of economic factors: these were compounded by the chaotic outcome of the political confrontation which took place when right-wing Peronist ministers attempted to tame the trade unions. The author's own sympathies lie with Peronism's moderates, who proved too weak to provide a durable government alternative themselves. Although on occasions the centrist temporarily enjoyed the support of union leaders in battles against the right wing, the union men were also susceptible to pressures from often militant memberships. Here, Di Tella's analysis is limited by his focus upon

party rule — a revolutionary step in the context of any communist state. Since Solidarity was not a reformist movement, its suppression does not signify the end of hopes for reform within communist central Europe, as the closing sections of the book imply. Taking little account of much of the recent western academic literature on the subject, they paint too stark a picture of the alternatives: either post-totalitarian military authoritarianism or democratic reform achieved by total social movements of which Solidarity was the latest and most important.

The weaknesses of some of the general analytical parts of the book, however, in no way detract from its major strengths. As a study illuminating Solidarity from within its militant ranks it is unlikely to be surpassed.



Juan Perón

elites, for his presentation of the general strike of 1975 as chiefly a move by labour leaders to oust reactionary ministers ignores the fact that workers paralysed the economy days before their leaders reluctantly declared the strike.

The author's treatment of the growing dissidence of the Peronist left in 1973-74 is also somewhat partial. He tends to reduce the phenomenon to one of "subversive groups" and admits to incomprehension of a more general left-wing dissatisfaction over the government's non-implementation of most of its mildly reformist electoral programme.

Professor di Tella's book finishes with chapters on central economic issues raised by the Argentine experience, including the causes of inflation and means of fighting it. This broadens the appeal of an important and interesting volume which for Latin Americanists should become a standard work on the economics of late Peronism.

Richard Gillespie

Richard Gillespie is junior research fellow in politics at St John's College, Oxford.

Surviving democracy

In Search of Modern Portugal: the revolution and its consequences
edited by Lawrence S. Graham and Douglas L. Wheeler
University of Wisconsin Press, \$30.00
ISBN 0 299 08990 8

The military coup in Portugal on April 25 1974, which ended nearly half a century of authoritarian rule and precipitated the collapse of the last great colonial empire, attracted the world's attention to this poor and neglected corner of western Europe.

The revolutionary politics of the nineteen months that followed, combined with the military importance of the Portuguese mainland and Atlantic islands for western defence, guaranteed the continuing attention of politicians and strategists, media persons and revolutionary tourists. With the victory of the military moderates in the bloodless encounter in November 1975 the Portuguese revolution (if it is proper to call it that) effectively came to an end. The

movement died down as the first fully democratic regime in Portuguese history was installed and global attention moved across the frontier into Spain, where Franco had died and a more violent upheaval seemed to threaten.

While current academic study of Portuguese politics undoubtedly received powerful stimulus from the dramatic events of 1974-75, it nevertheless predates them. In 1973 the International Conference Group on Modern Portugal, founded by the historian Douglas Wheeler, held its first conference. This volume contains 16 revised and updated papers from the group's second meeting in 1979.

The first of the book's four sections includes presentation and analysis by Tim Bruneau of the results of public opinion surveys on political attitudes conducted in 1978. These soundings were taken at a time when dissatisfaction with the political parties and with national policy was setting in, according to Bruneau, while they reveal that the population has been mildly supportive of Portuguese democracy it is nevertheless unhappy with the results of democracy. Conditions have certainly not improved since, yet on April 25 this year, in the fifth general election in nine years, a healthy 79 per cent of the electorate turned out and three quarters voted for the three major democratic parties. Like later contributions, Bruneau expresses surprise and anxiety that the former regime's leaders should still apparently command warm respect among many Portuguese. These words about the "rehabilitation" of Salazar and Caetano should remember that behind many of the shutters of the urban middle class and in most of the northern countryside they have never been rejected any more than was Pétain ousted from the hearts of many Frenchmen. Nostalgia is not the same thing as counter-revolutionary militancy.

Of the pieces in the second section, on social forces, the most ambitious is Tom Gollagher's, which endeavours to compress the history of the "cultural right" since the 1830s into 17 pages. The most scholarly is "Ideology and illusion in the Portuguese revolution: the role of the left", in which Bill Lomax dispassionately but remorselessly analyses the voluntarism and Jacobin/Leninist delusions of the various leftist tendencies from a Marxist standpoint. He concludes that the "authentic" revolutionary popular movement was weak, that the radicalized military's "transition toward socialism" was a non-event, and that "the different left-wing projects represented little more than different means for re-consolidating state power, and re-imposing social order and discipline over civil society". Lomax demands as high standards for admission to the genuinely revolutionary category as Bruneau sets for the genuinely democratic.

Three of the most useful contributions of the five in the third section are those by Nancy Bernice, putting worker-run enterprises into proper perspective; by Walter Opello, examining political awareness in Porto Rico; and by John Falcão, and edited by Larry Graham, who analyses the impact of revolutionary and democratic change on the bureaucracy. And in the last section, on the international perspective, Alex Macedo provides a neat and sensitive account of how the French and Italian Communist Parties, poised on the brink of "Eurocommunism", coped with the embarrassing anti-parliamentary antics of their Portuguese brothers as they lost their balance in the gale of events in 1974-75. Papers by the former Foreign Minister Medeiros Ferreira on post-revolutionary Portugal's international orientation, and by Pili-e Cunha on some of the problems of Portuguese entry into the EEC (this latter paper now quite out of date), reflect the views of the Lisbon political establishment.

In the closing essay Douglas Wheeler puts the last decade into historical perspective for the unwary social scientist. As a whole the volume constitutes a valuable distillation of the most recent work on the formative years of Portugal's surviving democracy.

Overall, it is perhaps unfortunate that Professor de Schweinitz did not take his own methodology more seriously. The history of imperialism must indeed deal with the experience of the imperialized, but that experience is much more complex and subtle than is allowed for here. It is unfortunate that such a bold effort at originality should be, in the end, self-destructive.

R. A. H. Robinson

R. A. H. Robinson is senior lecturer in modern history at the University of Birmingham.

Systems of coercion

The Rise and Fall of British India: imperialism as inequality
by Karl de Schweinitz, Jr
Methuen, £13.50 and £6.95
ISBN 0 416 33530 0 and 33541 3

This ambitious book is an essay on the nature of imperialism, defined as a special application of the use of coercion of force, within and between states and societies. By mixing political philosophy with welfare economics Professor de Schweinitz attempts to analyse the nature of internal and external systems of coercion, and to illustrate this theme by means of a historical study of one particular unit of relationship — that between Britain and India.

The identification of imperialism as a system creating and sustaining inequality is a useful exercise, all the more so since it has not ended with the overthrow of imperial systems. The basic problem of combining freedom with equality remains as still, especially in those countries where there is little to redistribute but poverty itself, and where "freedom" can all too often mean freedom to starve. De Schweinitz argues that imperialism is a distorting force that may cause more severe inequalities than those of the "normal" controls that characterize any society, and suggests that this phenomenon can only properly be studied in terms of its implications on the imperialized. Thus he turns to the history of British rule in India to investigate the way in which subject peoples experience the coercive impact of imperial conduct, and to map the path by which an awareness of this coercion can lead to a movement to overthrow imperialism.

The philosophical underpinnings of this argument represent a brave attempt to break new ground, to move away from the backwardness of thinking about the process of European expansion and Asian and African resurgence over the last two centuries. A genuine attempt to illustrate this theme using the example of India would indeed be thought-provoking. But unfortunately the author gets badly blown off course in his analysis of the Indian case. The Indian material that he uses is, for the most part, superficial and his interpretation of it reflects a very conventional, even old-fashioned, view of modern Indian history.

The clearest example of this weakness is the attempt to relate imperialism and nationalism in a dynamic relationship of the exercise and recognition of inequality. Until the mid nineteenth century, de Schweinitz argues, British imperialism in India had not reached a sufficient peak of intensity to be recognized by its subjects on largely different from previous systems of alien rule. In the late nineteenth century, by contrast, imperial exploitation reached its zenith and called forth a nationalist ideology freshly aware of the costs of subject status and able to create a vision of nationalism, freedom and equity that could fuel an opposition to oppression that was inevitably successful. However, this account omits any detailed analysis of the larger relationship between British rule and Indian economic development, ignores the thorny problem of colonial political and social transformation, and devalues the phenomenon of mass Gandhian nationalism (since the period from 1914 to 1947 is not dealt with at all). The notion that words are more important than deeds, that the idea of imperialism exploitation is more significant than its effects on colonial society, is a strange basis on which to build a history of anti-imperialist movements in India or anywhere else.

Overall, it is perhaps unfortunate that Professor de Schweinitz did not take his own methodology more seriously. The history of imperialism must indeed deal with the experience of the imperialized, but that experience is much more complex and subtle than is allowed for here. It is unfortunate that such a bold effort at originality should be, in the end, self-destructive.

B. R. Tomlinson

B. R. Tomlinson is lecturer in the department of social and economic history at the University of Birmingham.

Polytechnics continued

DUNDEE COLLEGE OF TECHNOLOGY
Department of Molecular & Life Sciences
**SENIOR LECTURESHIP
IN BIOLOGICAL SCIENCE**

The person appointed will be required to undertake a leadership role in the department, to teach up to honours degree level and to supervise postgraduate research. The principal duties will be in either microbiology or biochemistry but the successful candidate will also be expected to contribute to other disciplines areas e.g. biotechnology, physiology. Applicants should possess a good honours degree together with a higher degree in an appropriate discipline, and have recent relevant research and/or industrial experience.

Salary scale: £12,228-£13,572 (Bar) - £15,411, with initial placing depending upon approved previous experience. Financial assistance towards the cost of removal expenses may be payable.

Further particulars and application forms obtainable from the Personnel Officer, Dundee College of Technology, Ball Street, Dundee, DD1 1HG, with whom applications should be lodged by 30th September, 1983.

DUNDEE COLLEGE OF TECHNOLOGY
Department of Mechanical & Industrial Engineering
**LECTURESHIP IN DESIGN
or DYNAMICS**

The person appointed will be required to teach up to honours degree level. Applicants should possess a good honours degree in mechanical engineering and have appropriate teaching and industrial or research experience.

Salary scale: £8,313-£12,228 (bar) - £13,125, with initial placing depending upon approved previous experience. Financial assistance towards the cost of removal expenses may be payable.

Further particulars and application forms obtainable from the Personnel Officer, Dundee College of Technology, Ball Street, Dundee DD1 1HG to whom completed application forms should be returned by 30th September, 1983.

HUDDERSFIELD POLYTECHNIC
Department of Management and Administrative Studies
**LECTURER II/SENIOR LECTURER
In Business, Management & Administrative Studies**

Two Year Fixed Term

The Department is looking for a suitably qualified and experienced person to lecture mainly on undergraduate and postgraduate courses, in the areas of Business and Society and other related subjects.

Salary: Lecturer II £7,215-£11,568
Senior Lecturer £10,885-£12,582 (Bar) £13,443

Further details and application form may be obtained from the Personnel Office, The Polytechnic, Queensgate, Huddersfield HD1 3DH, Tel: 0484 22280, Ext. 2224 and should be returned to that office no later than 30th September, 1983.

Department of Mechanical and Production Engineering
Lecturer II/Senior Lecturer in Mechanical Engineering

Salary: £7,215-£11,568 per annum

Applications are invited for the above post from candidates with a good honours degree and some relevant industrial experience. The areas of interest to the department are varied and include those of Design Engineering, Thermodynamics, Fluid Mechanics and Advanced Materials. Applicants should have a knowledge of Computing and Computer Aided Engineering and experience with applications of computers in modern industry.

Further particulars and application forms are available from The Personnel Office, The Polytechnic of Wales, 100, Victoria Road, Cardiff CF10 2YD, Tel: 0303 205133, Ext. 2021. Closing date: 30th September, 1983.

The Polytechnic of Wales

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A team of scientists and engineering researchers are seeking to conduct a study of the properties of a new type of battery. The study will be carried out in the Energy Centre, which is a new facility for the study of batteries and related topics. The successful candidate will be required to assist in the design and construction of the battery, and to carry out the necessary tests and measurements. The candidate should have a degree in a relevant subject, such as physics or engineering, and should have some experience of working in a laboratory. The salary is £19,800-£21,500 p.a. inc. Further details and application forms are available from the Personnel Office, The Energy Centre, 100, Victoria Road, Cardiff CF10 2YD, Tel: 0303 205133, Ext. 2021. Closing date: 30th September, 1983.

Personal

For further details and application forms, please contact the Personnel Office, The Energy Centre, 100, Victoria Road, Cardiff CF10 2YD, Tel: 0303 205133, Ext. 2021. Closing date: 30th September, 1983.

North Staffordshire
Polytechnic
Department of Mechanical and Industrial Engineering
**PRINCIPAL
LECTURER /
SENIOR LECTURER
/LECTURER II**

Principal: £12,228-£13,572 (Bar) - £15,411
Senior Lecturer: £10,885-£12,582 (Bar) - £13,443
Lecturer II: £7,215-£11,568

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Salary: Lecturer II £7,215-£11,568
Senior Lecturer £10,885-£12,582 (Bar) £13,443

Further details and application form may be obtained from the Personnel Office, The Polytechnic, Queensgate, Huddersfield HD1 3DH, Tel: 0484 22280, Ext. 2224 and should be returned to that office no later than 30th September, 1983.

Department of Mechanical and Production Engineering
Lecturer II/Senior Lecturer in Mechanical Engineering

Salary: £7,215-£11,568 per annum

Applications are invited for the above post from candidates with a good honours degree and some relevant industrial experience. The areas of interest to the department are varied and include those of Design Engineering, Thermodynamics, Fluid Mechanics and Advanced Materials. Applicants should have a knowledge of Computing and Computer Aided Engineering and experience with applications of computers in modern industry.

Further particulars and application forms are available from The Personnel Office, The Polytechnic of Wales, 100, Victoria Road, Cardiff CF10 2YD, Tel: 0303 205133, Ext. 2021. Closing date: 30th September, 1983.

The Polytechnic of Wales

ENERGY CENTRE
Research Assistant:
Batteries

1980-1982 p.a. inc.

A team of scientists and engineering researchers are seeking to conduct a study of the properties of a new type of battery. The study will be carried out in the Energy Centre, which is a new facility for the study of batteries and related topics. The successful candidate will be required to assist in the design and construction of the battery, and to carry out the necessary tests and measurements. The candidate should have a degree in a relevant subject, such as physics or engineering, and should have some experience of working in a laboratory. The salary is £19,800-£21,500 p.a. inc. Further details and application forms are available from the Personnel Office, The Energy Centre, 100, Victoria Road, Cardiff CF10 2YD, Tel: 0303 205133, Ext. 2021. Closing date: 30th September, 1983.

Middlesex
Polytechnic
Energy Centre
**RESEARCH
ASSISTANT:
BATTERIES**

£5,886-£6,828 p.a. inc.

A three-year Science Research Assistant post, to carry out research into the properties of a new type of battery. The successful candidate will be required to assist in the design and construction of the battery, and to carry out the necessary tests and measurements. The candidate should have a degree in a relevant subject, such as physics or engineering, and should have some experience of working in a laboratory. The salary is £5,886-£6,828 p.a. inc. Further details and application forms are available from the Personnel Office, The Energy Centre, 100, Victoria Road, Cardiff CF10 2YD, Tel: 0303 205133, Ext. 2021. Closing date: 30th September, 1983.

DUNDEE COLLEGE OF TECHNOLOGY
Department of Mechanical & Industrial Engineering
**LECTURESHIP IN DESIGN
or DYNAMICS**

The person appointed will be required to teach up to honours degree level. Applicants should possess a good honours degree in mechanical engineering and have appropriate teaching and industrial or research experience.

Salary scale: £8,313-£12,228 (bar) - £13,125, with initial placing depending upon approved previous experience. Financial assistance towards the cost of removal expenses may be payable.

Further particulars and application forms obtainable from the Personnel Officer, Dundee College of Technology, Ball Street, Dundee DD1 1HG to whom completed application forms should be returned by 30th September, 1983.

HUDDERSFIELD POLYTECHNIC
Department of Management and Administrative Studies
**LECTURER II/SENIOR LECTURER
In Business, Management & Administrative Studies**

Two Year Fixed Term

The Department is looking for a suitably qualified and experienced person to lecture mainly on undergraduate and postgraduate courses, in the areas of Business and Society and other related subjects.

Salary: Lecturer II £7,215-£11,568
Senior Lecturer £10,885-£12,582 (Bar) £13,443

Further details and application form may be obtained from the Personnel Office, The Polytechnic, Queensgate, Huddersfield HD1 3DH, Tel: 0484 22280, Ext. 2224 and should be returned to that office no later than 30th September, 1983.

Department of Mechanical and Production Engineering
Lecturer II/Senior Lecturer in Mechanical Engineering

Salary: £7,215-£11,568 per annum

Applications are invited for the above post from candidates with a good honours degree and some relevant industrial experience. The areas of interest to the department are varied and include those of Design Engineering, Thermodynamics, Fluid Mechanics and Advanced Materials. Applicants should have a knowledge of Computing and Computer Aided Engineering and experience with applications of computers in modern industry.

Further particulars and application forms are available from The Personnel Office, The Polytechnic of Wales, 100, Victoria Road, Cardiff CF10 2YD, Tel: 0303 205133, Ext. 2021. Closing date: 30th September, 1983.

The Polytechnic of Wales

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1980-1982 p.a. inc.

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ROYAL MILITARY COLLEGE OF SCIENCE
Shrivenham, Swindon, Wiltshire
DEPARTMENT OF ELECTRICAL AND ELECTRONIC
ENGINEERING**SPECTRAL TRANSFORM TECHNIQUES**

Applications are invited for a research post to devise innovative techniques for measuring the electrical properties of materials at microwave, with improved accuracy and speed.

The post is for three years and applicants must possess a good honours degree in Physics, Engineering or Mathematics and have the ability to pursue the theoretical, experimental and computational aspects of the programme of work.

The successful candidate will be appointed at the grade of Research Scientist or Higher Research Scientist.

Salary scale: Research Scientist £5,882 to £7,785; Higher Research Scientist (minimum of two years postgraduate experience) £7,148 to £8,581.

Accommodation for a single person in a Hall of Residence may be available.

Application forms and further information may be obtained from the Civilian Admin Officer, Royal Military College of Science, Shrivenham, Swindon, Wilt. SN8 8LA. Tel: 0793 782851, Ext. 461. Please quote reference HQ 1201/181. Closing date for applications 14th October, 1983.

Research Assistant

Economic Historian (preferably with an interest in recent business history) to act as Research Assistant in a major study of the development of the U.K. railways business since the war. Financial and commercial aspects of corporate affairs, including relations with Government and successive investment programmes, will be studied from contemporary documents in a historical framework.

The successful applicant will be part of a research team working in London and the appointment will be for one year period (tenable from 2 January 1984, or as soon as possible thereafter). Salary will be at an appropriate level in the SERC scales, with London weighting. Applications, with curriculum vitae and the names of two academic referees, should be sent to:

Dr. T. N. Gourlay,
School of Economic and Social Studies,
University of East Anglia,
Norwich NR4 7TJ.

Closing date for applications: 12 October 1983.

Research Assistant

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Closing date for applications: 12 October 1983.

Colleges with Teacher Education

NEWMAN COLLEGE
BIRMINGHAM**PRINCIPAL**

Applications are invited from suitably qualified practising (Roman) Catholics for the post of Principal of this Catholic college.

The post will become vacant on 1st September, 1984 on the retirement of the present principal.

Salary: Burnham FE Principal, Group 5.

Further particulars may be obtained from:

Clerk to the Governors
Newman College
Bartley Green
Birmingham B32 3NT
Tel: 021 476 1181, Ext. 51
Closing date: 17th October, 1983.

Research Assistant

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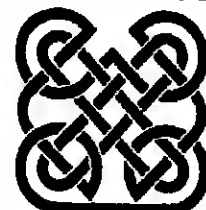
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Norwich NR4 7TJ.

Closing date for applications: 12 October 1983.

West Glamorgan
Institute of
Higher Education

Applications are invited for the following posts:

Faculty of Art & Design
**Lecturer II in
Technical Illustration**

Applicants should be experienced Technical Illustrators, aware of the needs of industry, and well-qualified academically/professionally. The possession of a higher degree would be an advantage. The successful candidate will be required to teach on the Degree Higher Diploma in Technical Illustration; teaching experience would also be an advantage. (Ref: HE1/19/83)

Faculty of Business Administration
**Senior Lecturer in Business
Studies (Two Posts)**

Candidates should be suitable graduates in Economics with an ability to contribute to Accounting, Statistics, Marketing and Public Sector Economics courses. The successful applicants will teach on a wide range of courses, and an interest in the development of research within the Faculty would be advantageous. (Ref: HE2/29/83)

Faculty of Electronic Engineering
**Lecturer II in Microelectronics/
Optoelectronics**

Applicants should be suitably qualified candidates specialising in Electronics or Microelectronics Systems. Candidates should have relevant postgraduate research or industrial experience. Teaching experience in higher education and a postgraduate degree would be an advantage. (Ref: HE3/5/83)

Faculty of Information Studies
**Lecturer II in
Data Communications or
Microcomputer Networks**

Applicants should possess a good honours degree with a specialism in Data Communications or Microcomputer Networks. Candidates should have relevant postgraduate research or industrial experience. Teaching experience in higher education and a postgraduate degree would be an advantage. (Ref: HE4/5/83)

Faculty of Information Studies
**Senior Lecturer in Computer
Aided Engineering (Electronics)**

Applicants should possess an honours degree or equivalent qualification in Electronic/Electrical Engineering or a related field with a keen interest in, and practical experience of, Computer Aided Engineering (Electronics). Research/development and/or teaching experience would be an advantage. (Ref: HE5/6/83)

Faculty of Information Studies
**Senior Lecturer in Business
Information (Two posts)**

These posts are in the newly created Faculty and applicants should be suitable graduates with a particular interest in Economics, Accounting, Marketing, Production Management and Behavioural Science. A good honours degree and teaching experience at degree level are essential. A higher degree and research experience would be an advantage. (Ref: HE6/6/83)

Faculty of Information Studies
Senior Lecturer in Computing

Applicants should be suitable graduates with expertise/research interests in the following areas: Operating Systems, Graphics, Microprocessors, Databases. A good honours degree and teaching experience at degree level are essential. A higher degree and research experience would be an advantage. (Ref: HE7/7/83)

Application forms and further details can be obtained by writing to the Principal, West Glamorgan Institute of Higher Education, Townhill Road, Swansea SA2 0UJ (see please), Closing date for applications: 30th September, 1983.

Cambridgeshire
College of Arts and
Technology
**LECTURER II/SENIOR LECTURER
IN COMPUTING/MATHEMATICS**

Applications are invited from suitably qualified and experienced persons for the above post, which becomes vacant in January 1984. The person appointed will be expected to make a significant contribution to the teaching of the data processing and systems analysis aspects of various computing courses offered by the Department. In addition, an ability to teach the mathematics and computing content of the various Degree and Higher Diploma courses served by the Department will be required.

Salary scale: Lecturer II £7,215-£11,568
Senior Lecturer £10,885-£12,582 (Bar) £13,443

Selection on the salary scale will be according to qualifications and experience.

Application forms and further particulars may be obtained from the Deputy Registrar, to whom completed applications should be returned by 30th September 1983.

Cambridgeshire
College of Arts and
Technology
**LECTURER II/SENIOR LECTURER
IN ELECTRONICS**

Applications are invited from suitably qualified and experienced persons for the above post, which becomes vacant in January 1984. The person appointed will be expected to make a significant contribution to the teaching of the data processing and systems analysis aspects of various electronics courses offered by the Department. In addition, an ability to teach the mathematics and computing content of the

DEPARTMENT OF EDUCATION AND SCIENCE HM Inspectors of Schools FURTHER AND HIGHER EDUCATION

Applications are invited from men and women, preferably aged between 35 and 45, for appointment as HM Inspectors, HMIs provide a service of professional advice at the Department of Education and Science and normally carry a general as well as a specialist assignment. Their work primarily involves inspecting and advising educational institutions, but also includes consulting with local education authorities and contributing to in-service training.

Vacancies exist for inspectors specialising in:

Construction, Electrical and Electronic Engineering Ref - 7/83

Construction specialists will be involved with all aspects of construction education at craft, technician and professional level. The level of work for engineering specialists will range from operative/credit education and training courses to postgraduate studies.

Biochemistry, Chemistry, Biology - 8/83

Those appointed will be involved in the inspection of applied chemistry, applied biology and biochemistry courses with a broad range of type and level.

Adult Education, Social Science and Social Work - 9/83

Adult education specialists would be involved in the inspection of current activities such as mid-career vocational updating and inner city education development. Social science and social work specialists would inspect a wide range of courses for those in social service employment including post-graduate nursing and para-medical courses.

Applicants must have had considerable experience and responsibility in their specialist area and have had an active interest in the applications. Appropriate academic qualifications, teaching and industrial/professional experience are essential.

Starting salary is within the range £14,400-£20,800 (up to £120 higher in London). Promotion prospects.

Application forms (to be returned by 14th October 1983) and further information may be obtained from Mr. E. O. Foster, Department of Education and Science, Room 1617, Elizabeth House, 38 York Road, London SE1 7PH, telephone 01-828 3222, extensions 2788 or 2237. Please quote the appropriate reference.

PRINCIPAL OF TRAINING CREWE

McCorquodale Machine Systems Limited, a member of the McCorquodale Group, specialising in the design, manufacture and marketing of advanced microprocessor controlled machines for the security printing industry, is seeking someone to take charge of their Training Department.

The person appointed will be responsible for the training standards and administration of the department and, in liaison with the Marketing Manager and Customer Training Manager, organise training programmes for the company, both internally and on site.

Training or lecturing experience would be an advantage as he/she will prepare course material from syllabus to students' notes and be expected to teach when required. A good degree or equivalent in Electronics is required.

The successful applicant will need to become familiar with the equipment and new technology being developed by the company and establish regular contact with the Design Department Managers to be able to report on current activities to the monthly Executive Meeting and to chair the Design/Service Liaison Committee.

There is an attractive salary and the normal benefits associated with a successful company. Assistance with relocation will be provided where necessary.

Please write or telephone in the first instance with brief details to:

Mrs D. Swift
McCorquodale Machine Systems Ltd
First Avenue, Crewe
Cheshire
Tel: 0270 547721

Miscellaneous

A new international journal for all the language professionals.

LANGUAGE MONTHLY

providing topical coverage of what is happening in all activities concerned with language teaching or translation.

Subscription rates: one year £12, six months £7. Single issue £1.20, inclusive of postage.

Available from the publishers:
Preston Limited, 30 Clarendon Street,
Nottingham NG1 6HQ, telephone 0502 411087.

Microelectronics and Special Education

INFORMATION TEACHER TRAINING

Two half-time and one full-time post.
Because of the increasing use of microelectronics with children with special educational needs, two additional half-time consultants for one full-time are required to work with the Microelectronics Education Programme National Co-ordinator.

The Information Consultant will be responsible for ensuring that teachers and educationists have easy access to information about hardware, software and sources of support. This will be done by producing and updating information sheets, producing a database of software and using all possible means to both build up and disseminate our knowledge about using micro with handicapped children.

The Teacher Training Consultant will initiate short in-service courses on using micro in special education. We anticipate producing 'blueprints' of various types of short course and working with Local Education Authorities and the Special Education Microelectronics Resource Centre (SEMERC) to implement these. As the area to be served is England, Wales and Northern Ireland considerable travelling would be involved.

Both consultants will work closely with the four SEMERCs. The contracts will be until March 1988 and much of the work will be done from home with (probably) fortnightly visits to CET's offices at 3 Devonshire Street, London W1. Secondment could be arranged.

Salary £5,000 p.a. plus £1,000 expenses for each half-time post.

Closing date for applications (by letter and curriculum vitae - no formal) is Friday, 30th September.

For further details contact the Office Manager, Council for Education Technology, 3 Devonshire Street, London W1N 2BA: TH8827

Colleges of Art

ROYAL NORTHERN COLLEGE OF MUSIC

1984 ENTRY

Applications are invited for entry in September 1984.

Applicants should note the new early closing date for receipt of applications.

This is 17th October, 1983.

Auditions for undergraduate entry will be held mainly in the period November to December 1983.

Details and application forms are available from the Secretary for Admissions.

Royal Northern College of Music

124 Oxford Road, Manchester M13 9RD

Tel: 061-273 6283

Cornwall Education Committee

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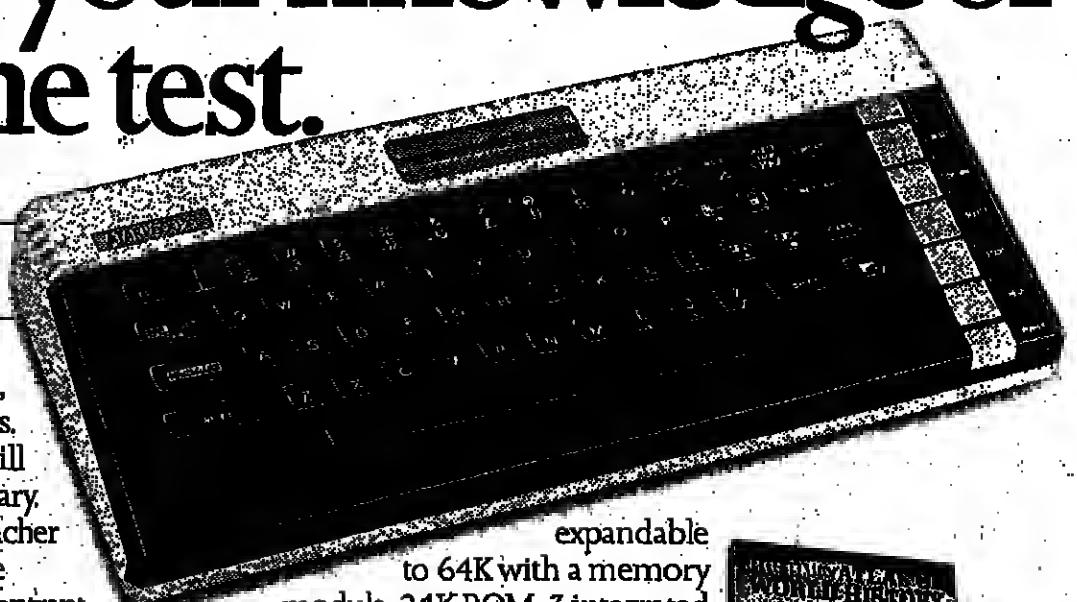
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REMINDER

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Don's diary

Monday

In at 8.30am. First things first, wash up last Friday's coffee mugs, on with the percolator, new provisions having been purchased at the weekend. Must remember to get a refund from my officemates! Early meeting to discuss exam scripts.

In the midst of phone calls to typing agencies, our resident electrician arrives. At last, the elusive socket for our treasured microcomputer is to be installed. Where's the fuse box? Don't ask me, I only teach here. Off comes a wall-panel, down comes a strip-light, off comes the socket panel for our percolator. Our poor coffee!

Our office responds to the high-pitched noise of electric drill and the hum of hammer. We are moving into the age of high technology. The age of the micro is well and truly here, at least, once the electric socket has been installed.

Lunch comes and goes. Time for our regular meeting with our research assistant, to discuss his proposed method of analysis for our current study of management training needs of service organizations in the Birmingham area.

As we have come to expect, a very thorough job has been done. We are all pleased and agree on the next stage of the project. This should produce some very interesting and useful insights into the market with the most potential for business management education initiatives.

Finally, discuss a way of integrating the issue of organizational change into a new final year subject on our business studies degree course. Looks exciting, enabling our students to generate theories and concepts from their own experiences of change.

I wonder what the role of exams will be in the years to come. Is life really about putting anything and everything down on paper in the shortest possible time? Leave for home, looking forward to tomorrow... team-building with some artists, surely a creative experience.

Tuesday

Out in the "real" world today. Working with a colleague, in a three-star hotel, helping a group of team-leaders from a design studio to focus on their tasks and responsibilities, and on which they can develop themselves. A very stimulating experience. The "client" suggests lunch, so we stay on for a pleasant salad and gâteau.

Two o'clock comes... must dash back to the poly, to get ready to listen to, and assess, several student presentations on one of our undergraduate business workshops. By six o'clock, we've got through our quota, so a quite good, others not so good.

Hopefully, they have gained from the experience, certainly the skill development opportunities are there to be grasped. Thank goodness business education is starting to emphasize skill development as well as cognitive learning.

No this to go home. As it is Tuesday, my wife and I are off to be educated ourselves, this week it's Labour II. With our first child due in early August (good timing for an academic!) Tuesday evenings are Premier League evenings at the local football.

Our expectations are unfulfilled however. A brief look at a rather grim delivery room and yet another late presentation, leaves us rather flat. If this is the right word to use at this time.

We reassure ourselves that it will be all right on the night. Today has been a skills day, leading teams, making presentations and giving briefings. Developing the skills is fine work!

Wednesday

Problems start today, with decisions needing to be made about a forthcoming management training open day at which we, as the business centre within the polytechnic, are attending. After looking at quotations from the printers, seriously consider changing careers. Maybe they really do print money!

Today is just one stream of meetings: to continue development of a new subject, to discuss teaching hours and remissions for next year and to work out ways of increasing our financial allocations for staff development.

Thursday

A chance for me to receive some education by attending a staff development course, organized by our newly formed faculty computing group, on word-processing. By four o'clock I can "mail-merge" customizing standard letters to potential clients, research respondents and others. Commit myself to put in the necessary time to really become proficient in this invaluable skill.

As with any such exercise carried out on the premises, normal everyday chaos intrudes. Spend a few minutes looking for some pithy quotes concerning the future, particularly of business and management, to form the basis of our exhibition display material.

One quote struck me as being particularly relevant: "The future isn't what it used to be." This also seems to apply to pronouncements about the future too.

Friday

Spend an hour helping one of the two HND students that a colleague and I have taken on for their placement period. With their local education authorities providing a grant extension, they have been able to work on a research project investigating the information needs of small businesses, including their awareness and evaluation of the existing sources of information and advice.

Taking students on placement has proved to be a very interesting experience, for once you actually can see day-by-day changes taking place in students who you would normally only see for one or two hours per week, and then mainly in a formal class setting. The learning opportunities available in the research process have been reinforced in my mind, as a result.

Friday afternoon draws on. Manage to fit in some time on the large-type typewriter, an invaluable machine for producing reasonably professional overhead transparencies.

Consults the week with a brief review of the Manpower Services Commission's discussion paper "Towards an Adult Training Strategy". The impetus for change seems to be there, pressed to see an emphasis being placed on skills development. On the way to the car-park, make a mental note to buy some more coffee, and some rubber gloves for all that washing up!

Graham Kelly

The author is a principal lecturer in the department of business and management studies at City of Birmingham Polytechnic.

At half-past one in the morning in May last year, three polytechnic students - two girls and a boy returning from a party - were crossing the main road near their residence in Headingley, Leeds, when a car came down the road. It hit all three and drove on. One of the girls was killed, the boy was critically injured and died in hospital, the second girl was seriously injured but will be returning to the polytechnic after a protracted period of treatment and convalescence.

The driver was traced by the police and came to trial in Leeds Crown Court nearly a year later, in April of this year. He agreed that he had had a few drinks of lager. He had not been breathalysed. He was found guilty of driving without due care and attention. He was fined £200 and banned from driving for one year.

I find it difficult writing about this because it is the kind of subject that leaves me open-mouthed with almost nothing to say. In any case I am not by nature vindictive and do not see much value in punishment for its own sake. I doubt if the relatives of the victims can possibly take such a disinterested view - or the surviving girl, who may, I suspect, be prevented from driving for life as a result of her injuries. It does seem that the law is difficult to understand - or even quite crazy.

There were, of course, mitigating circumstances. The road where the accident occurred is badly lit and there have been many protests about it. Those protesting about the road have the usual difficulty, as a result of local government reorganization and its absurdities, of not knowing whether to protest to the district council or the county council. But they have now formulated their concerns for transmission to the county and pointed out that on that stretch of road in the last four years five people have been killed, 28 seriously injured and 58 slightly injured. The county are taking the matter seriously. The work has been put on the "reserved" list of improvements, which means that it will not be given priority.

The relationship between the offence and the sentence does seem tenuous. Of course no sentence can bring back a human life which has been so suddenly terminated but I can understand the bitterness felt by some of the relatives concerned. So I have followed a number of similar incidents in the press and discussed the matter with many people who encounter such tragedies, including clergy and doctors and magistrates. Without exception they express no surprise whatever at the sentence, and usually finish my

Mysteries of crime and punishment



Patrick Nuttgens

story for me before I have got to the punchline.

The fact is that English law is much more concerned with property than with life. Steal some money and you will certainly get a serious sentence. If you steal a great deal of money, like the Great Train Robbers, you will get a memorable sentence without much prospect of remission. To many of us they are welcome to the money as long as they don't hurt people. My reading of history suggests to me that some people have got away with vast sums and become highly respectable within a few generations.

I am told that there was a definitive case which provided the pattern of punishment for such offences against human life and that the essence of the problem is *intent*. Whatever may be the case in other legal traditions (and I understand that in Scots law ignorance and lack of intent are not such an excuse as they are in England) it is necessary in English law to prove that the offence was intentional if it is to carry a formidable sentence.

Without that kind of intent it is simply a matter of undue care and attention. It is an interesting principle, which does not (unfortunately for many students) apply in the case of examinations. Undue care and attention are precisely what rob them of a qualification; I doubt if many of them really intend to fail.

ship but offer all ranks a 24-hour laundry service.

Did you ever think how every naval officer always has the most immaculate white shirt? The Chinese are indispensable to the morale of the Royal Navy. For that matter, the chawwallahs or pretty Indian girls, who troops in Northern Ireland, selling tea and sandwiches to exhausted patrols through the night.

The problem was that they got other ideas at university and the Navy found itself losing some 34 per cent of its investment. Now the potential recruit has to "spend" a year at Dartmouth learning seamanship - part of the time being devoted to ship-board training in the Mediterranean and the Caribbean. This is followed by three years at sea, with fees paid by the MOD and "pay" - not a means tested grant - of over £4,500 in the first year which rises to over £5,600 in the third year.

Studies can range from textile management to Latin and although engineering is somewhat favoured, the Navy now prefers to train its engineers in a new incentive are bursaries of £200 each, now offered to first year university students if they will enter the Navy on graduating.

Graduate entry has been adding up. In recent years and forms 24

It must of course be difficult to prove that you stole something without intent, unless it was the kind of pathological lapse that happens from time to time in a supermarket and even then you will be pursued with some force. But it must be unusual to steal a large amount of money unintentionally.

Those of us who are disabled by disease without anyone being at fault have a lot of sympathy for the people who are disabled not through the acts of their own but through the acts of others that without any thought or intent at all lead to the most tragic consequences. There is no consolation in such cases, even if there might be more justice.

The law remains baffling. As Black, once remarked: "Justice may not only be done, it must be seen to be done."

Meantime, the work of the polytechnic continues. As I write this, it is dealing with the enormous number of applications that have already poured in to the place and the telephone inquiries that follow the school examination results at the end of August and the beginning of September. It is of course the worst period for applicants. The 18 plus group is at its maximum size and so start going down next year, slowly at first. But two factors have dramatically increased the number of applications.

The universities have established target figures after draconian advice from the University Grants Committee, a considerable number of school leavers who might otherwise have crept in to a university are now heading towards the polytechnics. And employment has persuaded many boys and girls to stay at school and keep their options open. What is less easy to see is the degree to which students are opting for vocational courses in the hope of employment.

Leeds Polytechnic this year has had 14,000 applications for 2,000 full places and is probably not unique. That is 23 per cent up on last year. Courses like accounting, business studies and law attract more than a thousand applications each, but the does not know how many applicants have also applied to every other place. Unsurprisingly in a country devoted to anything except technology, the few vacancies are in branches of engineering. But even that is a very different matter from what it was a few years ago when courses were seriously under-subscribed. The case for a polytechnic clearing house parallel to the Universities Central Council on Admissions is quite clear and overdue. Unfortunately it seems that it is unlikely to be in operation before 1986.

per cent of the Navy's effort only. But it looks as though the best academic students are not attracted. On the other hand, the Navy is looking to a much wider range of attributes - those nebulous, so-called, "leadership" qualities.

So the Navy turns to the public schools. Some 35 per cent of the Navy's recruitment comes from comprehensive schools, but the independent school intake has steadily risen from 25 per cent in 1973 to 35 per cent today.

But I am not convinced that the image of the naval officer as a southern, public school smoothie reflects all that badly on the Navy's recruitment system.

The recruitment effort is considerable. The Navy has five regional recruiting centres and despite recent staff reductions still has over 450 career information officers. What is interesting is that it finds recruitment much easier south of the Wash.

Now this in part may simply be related to the fact that there are many more naval establishments in the south and little of a Navy presence in the Midlands. But it is the view of Navy recruiters that the further north the more young people are in their outlook and home life. And the greatest self-confidence is displayed by public school boys.

It is worth a thought that even when officers are recruited from the south, they have married a northern girl, the family stays determinedly to the north, despite a posting, say to Portsmouth.

Balanced recruitment is not made any easier by the attitude of certain Labour councils. The Sheffield education authority, for example, refuses to allow the Navy access to its schools, a fortuitous reflection on those politicians whose stock-in-trade is harping on the lack of job opportunities.

LETTERS TO THE EDITOR

Popular fallacies concerning Popper's philosophy

Sir, - David Papineau's brilliantly written review "Popular appeal of Popper's message" (*THE TIMES*, September 9) gets some things right, some disastrously wrong.

He is right to hold that Popper's philosophy of science fails to solve its two basic problems - the problems of induction and demarcation. Popper's two reasons for holding this are however hopelessly inadequate.

First, in sharp contrast to what Papineau claims, Popper does give reasons why "corroborated" scientific theories deserve to be preferred to uncorroborated or unscientific theories, when it comes to action. When we act, the best that we can do, according to Popper, is to choose theories which have survived the best of the most severe criticisms: these are corroborated scientific theories. Perhaps this attempt of Popper to provide a rationale for preferring corroborated scientific theories when it comes to action is inadequate; but it exists (and, on the face of it, makes good intuitive sense). Papineau is thus quite wrong to say that "Popper, as a good Humean, can give no answer" to this question of a rationale.

Second, Papineau is quite wrong when he claims that Popper's proposed solution to the problem of demarcation is unacceptable in that Kuhn, Feyerabend and Lakatos have shown that scientific theories cannot be decisively refuted empirically. Popper has repeatedly stressed throughout his writings, from *The Logic of Scientific Discovery* to *The Postscript*, that his falsificationist criterion for demarcating science from non-science does not require that scientific theories can be known to be false with certainty on empirical grounds. Popper has himself argued this cogently against this view - sometimes called *naïve falsificationism* - and indeed many of the arguments of Kuhn, Feyerabend and Lakatos against this view come from Popper in the first place, as these authors would readily admit.

The fundamental inadequacy of Popper's proposed solution to his two basic problems is, I suggest, quite different from, and much more important than, these spurious inadequacies discerned by Papineau. It arises from Popper's failure to appreciate, and indeed his rejection of, the crucial point, repeatedly stressed by Einstein, that science cannot proceed without making the metaphysical assumption that the universe is comprehensible in some way or other.

As Hume in effect showed, although any accepted scientific theory there must always be infinitely many rival theories that are all on the face of it, as equally successful empirically as far as all available evidence is concerned. My claim is that in order to avoid being stifled by this plethora of alternative theories, science is

obliged to assume that the universe is comprehensible in some way or other, preference being given to those empirically successful theories which best comply with this assumption of comprehensibility.

Thus two distinct kinds of considerations govern choice of theory in science: (1) empirical considerations, and (2) considerations that have to do with the simplicity or unity of the theory, its compatibility with the assumption that the universe is comprehensible, in some way or other. The idea that science presupposes the unity or comprehensibility of the universe in this way played a major role in Einstein's development and advocacy of special and general relativity, in his criticism of quantum theory, and in his explicit philosophy of science.

It is however basic to Popper's philosophical work to combat the idea that science makes substantial assumptions about the world on non-empirical grounds. Popper seeks to defend what he calls "the principle of empiricism," which asserts that in science, only observation and experiment may decide upon the acceptance or rejection of scientific statements, including laws and theories" (*Conjectures and Refutations*, p. 54). In *The Logic of Scientific Discovery* he does this by arguing, in effect, as follows.

In selecting theories solely by means of empirical considerations, we are entitled to prefer, other things being equal, theories most open to being selected in this way; we are entitled, that is, to prefer highly falsifiable theories. But the more falsifiable a theory, so the simpler (or more comprehensible) it is, *all else being equal*. Thus in giving preference to simple theories we do not at all presuppose non-empirical grounds that the world is simple (or comprehensible): quite the contrary, we allow empirical considerations alone to determine our choice of theory in the most efficient, impartial manner conceivable.

For this argument to work it is essential that increasing falsifiability invariably involves increasing simplicity, and vice versa. But this is not the case. One can readily increase the falsifiability of a theory by making *ad hoc* additions to it, which annihilate the "simplicity" of the theory, as this would ordinarily be understood in science. Given any simple theory, there will always be infinitely many rival complex theories, all equally falsifiable.

Simplicity, as understood in science, has to do with what a theory asserts about the world, and not just with how much the theory asserts (empirical content or falsifiability). Thus in giving preference to simple theories on non-empirical grounds, science does in effect presuppose a substantial assumption about the nature of the world, to the effect that the world is

simple or comprehensible rather than complex and incomprehensible.

Popper's principle of empiricism - together with his proposed solutions to the problems of induction and demarcation which presuppose it - must be rejected. Popper's philosophy of science fails because it rejects the central philosophical point of Einstein's scientific work - a somewhat ironic conclusion to reach given that Popper himself has claimed for his philosophy of science no more than that it makes explicit what is implicit in Einstein's contribution to science.

Papineau is quite right to point out the absurdity of creating a dogmatic Popperian school of thought, complete with schisms and emotional denunciations of criticism. He is wrong, however, in my view, in his assessment of the importance of Popper's work. I am in agreement with those who hold that Popper's work constitutes a major contribution to philosophy.

His criticisms of profoundly influential doctrines - such as inductivism, justificationism, positivism, instrumentalism, idealism, relativism, historicism and various forms of irrationalism and scholasticism - are in my view decisive and of great general importance. He has made major contributions towards solving major philosophical problems which have baffled people for centuries; and if he has not always definitively solved his problems, nevertheless his contributions have transformed the entire philosophical situation, so that our whole approach to philosophy after Popper has been changed.

No one who has understood Popper could conceivably continue to pursue philosophy as a specialized academic discipline, concerned primarily with the analysis of concepts, divorced from other concerns. The fact that so many academic philosophers do continue to do just this indicates in my view that among academic philosophers Popper's message has been only very poorly understood.

What is for me especially striking about Popper's work is the way in which the solutions he proposes to his philosophical problems have fruitful and wide ranging implications for all kinds of activities and concerns: for science, for politics, for education, for religion, for music and art. I for one criticize Popper's views not in order to belittle or annihilate them, but in an attempt to discover how they may be fruitfully developed and improved, if possible in the kind of way that Popper himself developed his views. This is the challenge that Popper's work throws out to his reader.

Yours sincerely,
NICHOLAS MAXWELL,
Lecturer in philosophy of science,
University College, London.

Postgraduate protection
Sir, - I would like to comment on the lack of protection for postgraduate students in universities if they have complaints about their supervisors or about their supervisors. Having done two degrees by research, I have experienced most satisfactory supervision in one instance and minimal supervision in the other instance.

In the latter case, the supervisor did not keep abreast of the project ideas and was really only aware of the objectives of the project upon the presentation of a draft of the thesis contents to the fourth year. Although the university's book of regulations for higher degrees stated that a supervisor should devote about one hour per week to each research student, I could not obtain an appointment until two or three weeks afterwards.

It is also disheartening that it is left so much to the supervisor's discretion whether a student is given any credit for his/her work when the findings of his/her project are presented by a supervisor at a conference.

Unfortunately, the National Union of Students does not represent postgraduate students very well or willingly as they are mostly concerned with undergraduate student affairs. The alternative is the Postgraduate Association which has such a small membership that it is at a disadvantage.

Yours faithfully,
LIS WILLS,
177 Woodlands Road,
Sparks Hill, Birmingham.

Transport studies
Sir, - I read with interest the article entitled "Demand: accelerates for transport studies" (*THE TIMES*, September 2). It seems to support the case for undergraduate courses in the broad field of transport and in so doing is in sympathy with the philosophy, which led to the establishment of an undergraduate degree course in transport.

Preserving tenure within mergers

Sir, - It is clear that a battle has now commenced within the University of London to preserve tenure not merely for existing staff but for those to whom the inheritance of our university will fall long after the present generation of teachers has passed from the scene. It is also clear that my friends and I at Royal Holloway College, together with our colleagues at Bedford College, are in the forefront of this battle.

It is a matter of great pride that the Association of University Teachers members at both colleges, and both academic boards, have taken a stand not in defence of their own contracts (which, as the draft Bill in merge the two colleges now stands, would be preserved in any case) but in defence of the principle of tenure. It is a matter of the deepest regret that the working party established by the two college councils has chosen to capitulate to the opinions of the Department of Education and Science expressed at third hand.

If the Government wishes to modify tenure at the new institution at Egham by inserting a redundancy provision, let it bring forward such a proposal if and when the Bill reaches Westminster. But I, for my part, believe that tenure is less likely to be breached by pressure from without than by betrayal from within.

Yours faithfully,
GEOFFREY ALDERMAN
Senator of the University of London;
President of the Royal Holloway College local AUT; chairman of the London committee of the AUT.

Sir, - I was amazed to read (*THE TIMES*, September 9) that the vice chancellor of London University, Professor Quirk, has written to the Committee of Vice Chancellors and Principals categorically stating that the statutes of the new merged Bedford and Royal Holloway colleges will have a redundancy clause written in it.

If true this would seem to me to be a gross interference in the autonomy and democratic deliberations of the two colleges. Absolutely no decisions have been taken about this matter.

The two academic boards and the two Association of University Teachers branches of the colleges strongly support tenure and are implacably opposed to the introduction of any redundancy clause, which would have other things weakened a new institution in any new round of cuts as compared to other London colleges. Perhaps that is what the vice chancellor has in mind.

Two out of three college working parties set up to look at the new statutes have recommended against a redundancy clause as indeed has Royal Holloway College council. The matter is now being intensively discussed by Bedford College's governors and full discussions will be taking place with all the staff concerned this autumn.

I very much regret any attempt to preempt the proper decision making procedures of the two institutions and call on the vice chancellor to publish his letter and clarify his own personal position.

Yours sincerely,
BILL STEPHENSON,
Vice-president of Bedford College AUT.

Pressure for peace

Sir, - It will be interesting to see if the Academic Council for Peace and Freedom (*THE TIMES*, September 9) is a genuine pressure group for disarmament or simply anti-unilateralist. Whenever I engage with unilateralists I find them arguing cogently and with conviction for multilateral disarmament. They are also prepared to take the first step. Whenever I have tried to discuss multilateral disarmament with British unilateralists they only seem interested in defending the arms race. Let us hope that the ACPF will change all this.

Yours sincerely,
ROBERT MOORE,
Department of sociology,
University of Aberdeen.

Letters for publication should arrive by Tuesday morning. They should be as short as possible and written on one side of the paper. The editor reserves the right to cut or amend them if necessary.

Union View

Ulster: the making of change

The merging of Ulster Polytechnic and the New University of Ulster are regularly told in the columns of this newspaper can and should herald a new era in higher education. We are promised the best of both worlds: the best of the traditional university and the best of the new polytechnic. The new institution should be a blueprint for the next century: an efficient organization that responds quickly to the needs of its community, providing impetus for commerce, industry and the arts and relating meaningfully to its environment.

I was much concerned, therefore, when a member of the NUU, sharing an interview on radio with me, commented that he expected that within a few years the new university would revert to being a traditional university. It was sad to hear that the present idealism was already being seen as a mere passing fashion. We must not lose the game before we have begun it. The APT believes that the ideal is attainable. What is important is to question closely how the ideal can be built into the basic structures of the new institution so that the "polytechnic ethos" cannot simply be eroded away. This should be one of the central preoccupations of the steering group. It demands an open, creative approach to considering the structures of the new institution. A management structure that works in the traditional university may not be right for an institution with different aims; likewise a management structure that has worked in a polytechnic giving CNAA degrees may not be right for an autonomous institution.

Already it is clear that there are constraints on change. The Privy Council insists on certain guidelines being met for the establishment of any new university. There must, for instance, be a majority of professors in any elected group on the senate. The APT's suggestions for a more wide-ranging representation with a more democratic distribution of seats was unacceptable, because the suggestions would not conform to the rules.

Another sensitive area is the status and pay of professors and heads of departments. The traditional university rewards individual academic achievement with the establishment of chairs. The polytechnic, in contrast, looks for a combination of assets in its choice of heads of departments. The new university may well need to establish a broader criterion for its professors. The Leverhulme publication *Excellence in Diversity* rightly stresses the need for higher education to turn out graduates with the ability to work in teams with others, to contribute to group thinking and to communicate effectively. If these qualities are the ones that society requires, then should we not also be looking for such qualities in the leaders of university departments?

A radical university is likely to require a different power structure from the traditional arrangements. The natural, best-loved corner of the existing structure is the single honours degree. It fits neatly into the power system. Combined degrees and especially cross-faculty degrees carry with them problems of delicate relations with possibly threatening groups.

The Leverhulme report recognizes that the country needs a new style of graduate. That implies a need not just for new shorter courses which may be only a superficial answer to the problem but new-style universities where decision making is lodged in an appropriate power structure. The Ulster merger gives us the opportunity to seek out such a structure. We fail and allow the new institution to drift back to being a traditional university we fail not only to meet the needs of Ulster but also to meet the needs of the whole of United Kingdom society.

Heather Eggins
The author is national vice chairman of the Association of Polytechnic Teachers and chairman of the Ulster Polytechnic branch.